

April, 1982

Single Copies \$2.50

the RAINBOW

5803 Timber Ridge Drive • Prospect, KY 40059

VOLUME I NUMBER 10

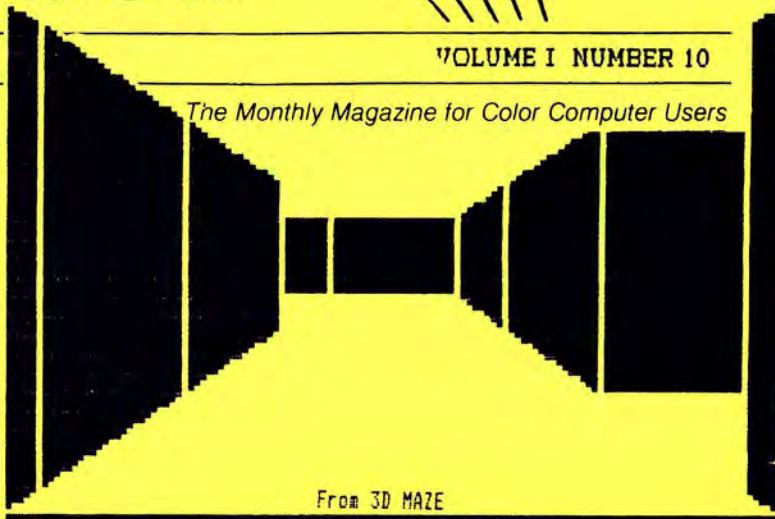
The Monthly Magazine for Color Computer Users

Under the RAINBOW

Graph Your Bills
Better 8-Bit Driver
Match Music Tones
On-Screen Scores

Word Processors Reviewed
Two GREAT Games
Disk Save Utility
Hints & Tips

AND...MUCH MORE!!!



A Special Feature...

EASY, SUPER ANIMATION

Editor's Notes...

PRINT #-2,

Well, no one came up with a *CANTERBURY ADVENTURE* for this, the April issue, as I suggested in my column a month ago. I didn't really expect it, though, on such short notice.

But, that does give rise to telling you that we are planning a special "Adventure" issue for the future -- probably in late summer. That issue will have a whole bunch of adventure information and a lot of reviews of adventure software. While we won't stint on other useful stuff, we plan to target a good portion of

that issue of *the RAINBOW* to adventures.

And we're planning some other special issues, too. General subjects are on home utilities like money management and the like, and on educational programs. This does not mean we'll be "saving up" for these issues, but we do plan to have an emphasis on those subject areas in the coming months.

You'll see a notice inside about

(Continued on Page 32)

LETTERS TO RAINBOW



MORE PRETTYPRINT

Editor:

I just received my first issue of the RAINBOW today. Good stuff!

I have some additional information regarding prettyprinting with CoCo. As you stated, a colon must be placed right after the line number when entering extra spaces to a new statement. However, once the line has been entered, extra spaces can be added without the colon key using the BASIC editor's insert command. A note of caution, these spaces will disappear if you save the program in ASCII format.

On a different note, I read with interest your Pipeline column concerning Wayne Green and 80-Micro. Bravo for our side! Wayne seems to think he is doing his readers a favor by publishing 80-Micro. Three cheers for everyone who supports the CoCo.

Ron Crouch
Ft. Worth, TX

INTO MUSIC COMPOSING

Editor:

I have received my second issue of the RAINBOW and the back issues I ordered. I really enjoy the magazine and think it is the best.

I'm hoping that someone will come up with a really good and complete music coposer program. Radio Shack's is a fine one as far as it goes, but it left out too many essentials to be used for any serious use.

I hope to become adept at programming and your magazine is a great help toward that goal. I look forward, each month, to receiving the RAINBOW.

Norman C. Place
Zolfo Springs, FL

MORE RANDOM THOUGHTS

Editor:

In your February issue, Mr. Hasenstaub wrote in about the RND function for dice simulation. He is correct in saying that two RND

functions are necessary in order to obtain "correct" odds for given numbers.

However, when he says that by using only one RND function you will get numbers between one and twelve he is only partially correct. You can very easily get RND numbers between two and twelve by applying a conditional statement to the RND variable you are using -- although the odds for all numbers will be the same.

The following short program will produce RND numbers between two and twelve using only one RND function.

```
10 CLS
20 FOR N=1 TO 24
30 A=RND(12)
40 IF A<1 THEN GOTO30
50 PRINT A,
60 NEXT N
70 END
```

Thank you.

Rita Lawry
Cleveland, OH

ART PRINTS?

Editor:

Can anyone out there help me? I bought a Radio Shack ART GALLERY CoCo program today and was surprised (and disappointed) to find that it does not have a way to output screen contents to the printer.

I am inexperienced in programming and don't know of a way to accomplish this. Is there maybe an easy program that would "load" a picture saved on cassette, and then print using the screen print program -- which I have. Or some other way?

Gary Burkhardt
Coldwater, MI

AGREES WITH REVIEW

Editor:

Congratulations on the success and growing popularity of your publication. The capability of the Color-80 for the price is outstanding and I am sure the market will continue to grow. The one need is for more dedicated software and technical support such as the kind you are providing.

I am in agreement with the review by Rick Smith in your February issue on the 32K upgrade from one of your advertisers, Computerware. It works perfectly. The installation went well following their suggestion that low profile sockets be installed between the motherboard and the new board to allow for any minor alignment. The OM ERROR is gone.

John Arbogast
Hamilton, OH

A MERGE SYSTEM

Editor:

I enjoyed your Pipeline comments of February. The RAINBOW and the CoCo are really growing. It is refreshing to find TRS-80 Color Computer ads without having to sort through all the others.

For some time I have been looking for a merge routine to join two rather long BASIC programs. Perhaps there is a merge routine, but I couldn't find one so, being the sort of person I am, I set out to build one (Ed. Note: The September issue, No. 3, carried a merge routine).

Here is how my manual merge routine works:

If your programs are very long, you may have to edit out unnecessary lines of each program in order to get them both into memory. Also, some memory may be "taken back" from CoCo. Check the highest line number of the first program and renumber the second so that its starting line number is higher.

Now, on a blank cassette tape, CSAVE each program with its name using the ASCII format. Make note of how many "data bursts" there are in each program. The first "data burst" contains the ID and program type information. The last "data burst" contains the end of file information.

Now, CLOAD the first program, counting the "data bursts" and stop the tape recorder just before the last one. Leave the computer as is, it is still open to receive data.

Unplug the ear plug from the recorder and cue up the second

CORRECTION:

Page 20 Column 1 Line 500

SHOULD: 500 N = 4; D = 5; A \$ = "
GASOLINE"; C = 155; GOSUB 440; RETURN

program just past the first "data burst." Plug the ear plug back into the earphone jack of the recorder.

Now, press PLAY on the recorder. CoCo will keep on receiving data as if it were never interrupted until it receives the end of file information from the second program.

I find it easier just to pull the earphone plug from the cassette player just before the last "data burst", let the tape play through the player's speaker, and shove it back into the earphone jack just after the first "data burst" of the second program. You have to do it fast to do it this way but you may have better luck with the process -- especially if your tape recorder has a slow startup speed.

James Richter
Corpus Christi, TX

VIDEOTEX ON CART

Editor:

Your magazine is to be complemented on the information which it provides for owners of the Color Computer.

I am interested in obtaining information on how one can either print or dump the screen while using the VIDEOTEX program. The program I have is not on tape, but on a ROM cartridge.

In closing, let me say that as a research scientist, I find the Color Computer to have great potential in the lab and that your magazine seems to contain the type of information -- in both articles and advertising -- that I need to make the best possible use of my computer.

Drest Glembocski
Brooklyn, NY

WORD PROCESSOR IS SIMPLE

Editor:

When I received the January issue of the RAINBOW I immediately began using the word processing program you printed on page 11. Would you believe that was the first time I used my printer as a typewriter. Your program is so simple its unbelievable.

The RAINBOW has been extremely helpful to me and I anxiously await each issue.

I bought my CoCo in May, 1981, with 16K Extended Color Basic, and I have since modified it with a 16K Plus board from Computerware. I also have two disk drives and an Epson MX-80 printer. Since my initial investment, I am not sure I have made the best selection. Thus far, I have not been able to print graphics except from the short programs listed

in the MX-80 manual after I enter the Radio Shack PTFR16 program that changes the computer output from seven bit to eight bit. When I try to print other graphics, all I get is garbage. The same is true when I use the Radio Shack SCREEN PRINT program.

George Klement
Grandview, MO

(Ed. Note: The LP VII and LP VIII use dot/bit graphics which work with Radio Shack's SCREEN PRINT program. The MX-80 does not have dot/bit graphics unless you install the GRAFTRAX modification. Even then, the driver routines may be different so that you will have to write your own graphics programs. Does anyone have any further details on this?)

BORDER BEGONE?

Editor:

Your magazine was just what I was looking for for my CC.

Question: What commands can I give my 32K CC to not have the border around the screen so that the whole screen can be used?

Dennis DiJusto
Bronx, NY

E.N.G.L.I.S.H.

Editor:

Sot my first edition of the RAINBOW today and am finally impressed by a computer mag. Like Tom Nee of Pittsburgh, I need experts to talk to me in ENGLISH (Easy Non-Gibberish Language Including Simple Homologues), a language even more basic than BASIC. Remember it!

When I bought a TV set I was told how to plug it in, turn it on and tune in to the channel I want to watch. When I bought an adding machine I was shown the buttons and functions. I was very satisfied.

I want an inexpensive word processor, perhaps with a built-in spelling checker. Why must I wade through chips, POKE, PEEK, compiler,

smart terminals, Etc., Ad Nauseum.

Your publication comes closest, but where can I go to get ENGLISH answers to my questions?

I am a writer looking for a tool with no desire to become a programmer, technician or -- God help us -- a system analyzer.

HELP (Honestly Easy Language/Please)

Glenn Knight
Glen Burney, MD

Editor:

Regarding the letter in February from Mr. Tom Nee, I am in complete agreement with him. I would like to take the issue one step further. We are not hardware (electronics) experts either!

I'm going to stick my neck out and venture a guess that at least two-thirds of the present total market for peripherals, upgrades and software for the Color Computer consists of novices and semi-technical types that have a genuine interest in the CoCo, and, those folks that always seem to have money to spend on new things. So, why not write straightforward, plain-talk ads (and articles for that matter) about your products?

Don't get me wrong, I'm not talking about taking the CoCo to the level of a toy -- heaven forbid!!! I am talking about communicating the practical utility and worth of your products which can expand, upgrade and support the Color Computer in a manner that the layman can understand. And, in a manner that will allow him to make a buying decision.

By the way, if I'm wrong about the available marketplace, I'll withdraw my neck and extend my wrist for a slap. Maybe the RAINBOW would consider running a survey.

Jim Rauh
Kennewick, WA

(Ed. Note: O.K. everyone. Let's hear from you.)

the RAINBOW
PUBLISHED BY FALSOFT, INC.
5803 Timber Ridge Drive
Prospect, KY 40059

Entire Contents © by FALSOFT, INC., 1982
LAWRENCE C. FALK -- Editor

The RAINBOW is intended for the personal use and pleasure of its subscribers and reproduction by any means is forbidden. Use of programs and information herein is for the single end use of purchasers and any other use is prohibited.

TRS-80, Color Computer and Extended Color Basic are trademarks of Tandy Corp. All programs herein are distributed on an "as is" basis, without warranty as to suitability for any purpose.

Subscriptions to the RAINBOW are \$16 per year in the United States. Canadian and Mexican rates are \$22 per year. Surface mail to other countries is \$31, air mail to other countries is \$49. Non-U.S. rates are higher due to postage costs alone.

Limited back issues are available for \$2 each for issues 1-7, \$2.50 each for issues 8 and upward. Shipping and handling costs of \$2.50 per order must be added.

Payment accepted by cash, check, money order, VISA or MasterCard in U.S. funds. Please include account number, expiration date and your signature when using bank cards.

The RAINBOW is published every month of the year.

the ASSEMBLY CORNER

(EDITOR'S NOTE: Assembly Language is one of the most complicated subjects faced by personal computer users. Yet, it is one which can offer some of the greatest programming rewards for the experienced. The RAINBOW asked Dennis Lewandowski of DSL Computer Products, an experienced assembly language programmer, to write a series of tutorials on the subject. Dennis' column will appear monthly in the RAINBOW and is aimed at the beginner. We hope you will enjoy this new feature.)

By Dennis Lewandowski

Hello. And welcome to a new series of articles on 6809 assembly language. Lonnie Falk (who!) has asked me if I would share my knowledge of assembly language with the RAINBOW's readers. In deciding where to start, I will assume you have never dabbled in assembly language before and we will begin, as they say, from scratch.

First of all, you will need to become familiar with the "language" used in assembly language and you should also know about the three numbering systems we will be using.

THREE numbering systems? Eeeh gaad! No, don't stop reading here,

one of them is decimal -- the same system you use every day and were taught in grade school. That's easy.

System two is the only set any computer in the world, including our favorite CoCo, uses. It is called binary. Binary is based on the number two and the only "legal" numbers in the system are one and zero. (That's two numbers.) Once you have one and add one to it, you get 10. Confusing at first, yes. However, binary can be converted into the third number system, hexadecimal or hex. This is the most commonly used by computer programmers and is the best compromise between the system you know (decimal) and the one your CoCo knows (binary).

Hex is based on the number 16. Hold on there! There are only 10 numbers, zero to nine. How do we get 16 of them.

Well, we won't make up any numbers to confuse you, we'll just steal a few symbols from someplace else. And that someplace is the alphabet.

So, our hex numbers will translate into decimal numbers like this:

| | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| HEX | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| DEC | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

But, since hex is based on 16 and binary on two, once you achieve 16

PRICKLY - PEAR SOFTWARE QUALITY PROGRAMS FOR YOUR 16K EXTENDED COCO

The Great Word Game

Perhaps the best word game ever for Coco. There's great graphics, music, and crisp formatting. Plenty of on-screen instructions. Two to four players compete. If you like Scrabble® and Probe® you'll love this one. \$19.95

Arithmetic Learning System

This series of eight programs was developed by a teacher for use in his own 1st grade classroom. It has been extensively classroom tested by the author, who also teaches a University level course in elementary methods. Set difficulty parameters for fun instruction the children will love. \$19.95

Dungeons & Dragons® Package

Two programs: The first will display your choice of 99 different rooms in hi-res graphics at the touch of a key. Some with pools, pillars, stairs, etc. Saves lots of game time spent describing room sizes, shapes, and door locations. Number two generates **complete** characters or monsters. These were developed by an active DM, and have been tested in his campaign. Lots of documentation. \$19.95

Household Helper

This menu driven program will convert to or from metric, convert recipes to serve more or fewer people, project gasoline cost for trips or around town driving, keep track of your bills coming due, more. \$14.95

SEND A LONG S.A.S.E. FOR COMPLETE CATALOGUE

CASSETTE TAPE: Best quality Agfa tape in distinctive 5 screw shells. Stainless steel guide pins. C-12's - \$8.50 Doz. Add \$1.50 per dozen shipping.

EXTRA COPIES OF DOCUMENTATION AVAILABLE - 1.50 each

Your Personal check is welcome - no delay Include \$1.50 shipping for each program ordered. (Shipping free on \$50.00 or larger orders). Az. residents add 6% sales tax. Orders shipped within two days.

Send Order To: **PRICKLY-PEAR SOFTWARE**
3518 S. Randi Place
Tucson, Arizona 85730
(602) 886-1505

Probe® is Reg. T.M. of Parker Bros. Dungeons & Dragons is Reg. T.M. of TSR Games. Scrabble is Reg. T.M. of the Production & Mkt. Co.

hex, or two binary, you have "10" -- which is one in the "next greater" column. In other words, the number systems recycle according to their base, 2, 10 or 16.

There are whole books explaining the differences in numbering systems, and I don't (and can't) condense them all here. So, if you're a little confused by this, perhaps you can check one out of the local library and delve into it a little more deeply.

Now, about the language difference. Its not all that different. But, you might not be familiar with some of the words yet. You've already become acquainted with two of them, *hex* and *binary*. Let's borrow the dictionary format for the rest -- although we'll group them by subject, not alphabetically.

BIT -- The smallest piece of information your CoCo uses. A bit may be *SET* to one (1) or *RESET* to zero (0).

NIBBLE -- Four bits in a row, easily converted to a hex number 0 if all are reset, to an F if all are set.

BYTE -- Eight bits, or two nibbles in a row. Also easily converted from binary to hex. If all

are reset, it is 00. If all are set, it is FF.

DATA -- The arrangement of bits within a byte.

REGISTER -- A one or two byte location in which data is stored or acted upon. Can have many different uses and definitions.

MEMORY -- A series of bytes used for data storage.

ROM -- Read Only Memory. Data which has been saved for continual use and which is not meant to be changed. It cannot be erased if power is disconnected.

RAM -- Random Access Memory. A series of bytes which can be changed and reused over and over again. It will always be erased when the power is turned off.

PROGRAM -- A series of bytes designed to instruct the computer to perform in a certain manner. Can be saved on ROM or placed in RAM from tape, disk or keyboard.

BASIC -- An acronym for Beginner's All-purpose Symbolic Instruction Code. It is a series of programs, usually in ROM. CoCo uses a BASIC interpreter which must analyze each instruction before carrying it out.

MACHINE LANGUAGE -- The actual set of codes the CoCo uses to perform any function. No analysis of the instructions takes place, and the computer will do exactly what it is told.

OP CODE -- Operational Code. A name given to a machine language code, usually abbreviated to two through four letters for easy use.

ASSEMBLER -- A program which takes the OP CODE, does an analysis of it, and writes a machine language program.

I/O -- Input/Output. A computer's way of interfacing with the outside world. The keyboard is an example of input; the video display an example of output.

Well, enough definitions for now. But, in addition to helping you understand some of the terms we will be using, the definitions are the key to why assembly language can be such a good way to program.

Remember, we said that machine language is the actual set of codes the CoCo uses and that an assembler takes op codes, does an analysis, and generates a machine language program? Well, because that machine language uses the CoCo's *own* code, the machine language program is faster, more detailed and takes up less space than does a BASIC program. A BASIC

(Continued on next page)

ExIBMer (NOW RETIRED)

For the FIRST TIME -- Makes available to the PUBLIC
His personal collection of superior programs for the

TRS-80 COLOR

SEE HOW THE PROFESSIONALS DO IT!!
ALL PROGRAMS ARE OVER 14K LONG!!

12 MINUTE TALKING GRAPHIC DEMONSTRATION

SHOWS & TELLS "What's inside the TRS-80C and how it works" -- PLUS 12 self-contained, auto-start, artistic, hi-res, full color graphic demonstrations in fantastic motion -- all from 1 "CLOAD" A must if you want to show off your computer at its best to your friends and A MUST FOR ANY RS SALESMAN

ALL GRAPHICS \$24.95

CRAP TABLE up to 4 players can bet the full field before every roll of the dice -- LAS VEGAS payoff odds given on all 12 table bets

MPP GRAPHICS \$24.95

BLACK JACK 4 suits -- 52 cards -- card counter displays all remaining cards and % odds to HIT 21 -- call for new deck before any BET or HITS

MPP GRAPHICS \$24.95

SLOT MACHINE Looks sounds feels and operates as good as any BIG CASINO machine. Watch and listen to coins and arm drop

MPP GRAPHICS \$24.95

EL CASINO ALL GAMES
Ideal for Rumpus Room, Clubs, Parties and Social Events

MPP GRAPHICS \$49.95

MPP TUTORIAL Course includes Chromasettes 8-B cassette, MPP DRAWER, several MPP Pictures and MMs to start working with, all necessary instructions, completed MPP action packed programs, 100's of program hints

MPP GRAPHICS \$34.95

CHECK-BOOK 1 to 3 banks and/or credit card accounts -- Automatic Bank Reconciliation -- Automatic IRS expense listings and tabulations by major or minor expense account number

\$39.95

STOCK PORTFOLIO MGMT. Complete from daily P & L to IRS 1040D -- Charts all your stocks -- DOW JONES CHART'S from 1900 to 1982 are worth this price alone

MPP GRAPHICS \$69.95

* T=16K EXTENDED * D=32K DOS * POSTAGE PAID * ALLOW 2 TO 3 WEEKS

SUPERIOR GRAPHIC SOFTWARE

406 LITTLE MOUNTAIN ROAD WAYNESVILLE N.C. 28786

ASSEMBLY (From Page 5)

program is interpreted each time it is run. An assembly language program is interpreted only once -- when it is created. You leave out a whole step.

I can see you can see the end of this opening column in sight and are asking, is that all I'm going to get out of this, numbers and lingo? No way.

We'll get into using all of this in subsequent columns, but we do want to be firmly grounded in the basics first.

Until then, and to whet your appetite to the power of assembly language programming, I have included a short BASIC program which will put a machine language program into the memory of your CoCo and call it using BASIC's USR function. Its in this form because many of you may not have an assembler yet. The program will demonstrate the power of machine language by changing all colors of graphic blocks to the next color by using a 30 byte subroutine while leaving the text on the screen alone. It is written for Extended Color Basic. For non-extended, add a line:

```
80 POKE 275,4:POKE276,0
```

For 32K, change 12288 to 28672 in line 70.

```
70 DEFUSR0=28672
90 DATA 142,4,0,166,128,140,6,0
100 DATA 39,20,129,129,37,245,12
9
110 DATA 241,44,8,139,16,167,130
120 DATA 166, 128,32,233,128,112
,32,246,57
130 FOR X=28672 TO 28702:READY:P
OKE X,Y:NEXT
140 CLS(0)
150 Y=255:Z=480
160 FOR X=1024 TO 1216 STEP 32
170 FOR A=0 TO 31:X1=X+A
180 POKE X1,Y:POKE X1+Z,Y
190 NEXT A:Y=Y-16:Z=Z-64:NEXT X
200 PRINT@230,"PRESS THE SPACE B
AR";
210 PRINT@262,"TO INCREASE SPEED
!";
220 X=1000
230 FOR Y=0 TO X:NEXT
240 A=USR(0)
250 IF INKEY$="" THEN 230
260 X=X/2:IF X<1 THEN X=1
270 GOTO230
```

Next month we'll look at the Central Processing Unit, the CPU.

TRANS TEK

Color Computer Software Specialists

C. C. Writer

Features Page Formatting, Block Moves, Tabs, Sentence Deletion and Insertion, Global Search and Replace, Centering, Indenting, Page Pause, Justification, Scrolling Review, Keyboard Stops, File Chaining and much much more. See the January RAINBOW for a Review of this powerful program YOU can modify. Now available for disk too! 16-32K cassette-\$35. 32K Disk-\$40

NEW! --> Check Rec Plus

Reconciles your Checkbook AND allows you to keep Memo Entries of cash and credit card expenses without affecting your Checkbook balance. The History Files may be Listed and Totaled by Income or Expense Category for Budgeting or Tax Preparation. On screen Balancing and printed Trial Balances and Audit Trails. This system does things you wouldn't think possible with a cassette system and the disk system is even better.

Includes Systems/Storage Binder with full Documentation. 16 and 32K Cassette, \$40 16-32K Disk, \$45

QUAD Data Base

Simple but effective Mini-Data Base with many uses. Search on Codes or Text. Can print Mailing Labels. QUAD crams more in 16 or 32K at about half the price of competitive products. At \$10 it's a bargain but at \$7 it's a steal. Or spend about \$29.95 on a ROM pack from... 16-32K cassette or Disk - \$10 (\$7 with other purchase)

COMING SOON! --> C.C. Mailer

This is being written in February (with Disk C.C. Writer by the way) and April still looks like the ship date for this In Demand product. We mentioned that it was coming in our Product List and it was Back Ordered before it came out of Coding not to mention Systems and Field Testing. Mailing lists are a natural for the Color Computer and you add the ability to merge SELECTED Names and Addresses with your C.C. Writer Letters and you really have some Power. TransTek has some Fortune 500 Customers who recognize a Bargain too but the software listed above puts Real Systems in the reach of Individuals, Social Organizations, and Small Businesses (like us). Write for details.

All Disk Systems for Exatron or Radio Shack Disk.

For information, product list, or orders write to...

Transformation Technologies at:

TransTek BSC 2-5

194 Lockwood

Bloomington, IL 60108

TransTek products are distributed in the UK by The Work Force and in Australia and Asia by Wilson's.

Game...

AN A-MAZING GAME FOR YOUR FUN!

By Scott L. Bain

Welcome to the world of three dimensional mazes.

The following program, **3D MAZE**, is designed to put you right in the action, searching through a labyrinth for a way out.

Type in the program and run it. It will display a message and have you wait a short time while it creates a maze. Every time you run **3D MAZE**, the maze will be re-drawn. It is never the same twice.

Next, you will have to choose between fast and slow screens. **3D MAZE** is written in BASIC, and while the paint command used for the slow screens makes a more attractive display, it also slows down the response time for moving from about one-half second to nearly three seconds. Since the score-timer is always running, it makes the game more difficult when the response is slow.

While it may not be as pretty, the fast screen has some advantages. First, the quick moves are nice.

And, second, with the fast screen you have another choice -- whether or not to use a "helper trail." The helper-trail causes the program to leave a trail of "crumbs" behind you. This is very helpful to keep you from exploring the same area twice and getting lost in a maze of little twisty passages, all alike.

Once the screen comes up, you will see a view of the corridor in the direction you are facing, or just a wall in front of you. If you are facing a wall, just keep turning until you're facing down a hallway.

Now, you can move freely through the maze. The up-arrow key will move you forward, the down-arrow will turn you completely around, and the right- and left-arrows will turn you in that direction. This will be an immediate turn, by the way.

You're looking for a hole in the floor. Once you find it, move into it and you will be out of the maze and the game will be over. The program will then switch to the text screen and display an overhead view of the maze, indicating areas you have explored and those you haven't. It will also tell you how long it took you to find the hole and where the hole was.

Occasionally you'll push a key,

(Continued on next page)

HARMONYCS

P.O. BOX 1573
SALT LAKE CITY, UTAH
84110-1573

MONEY MINDER II — \$8.95

CASSETTE BASED PERSONAL FINANCE

- *Helps you see where the \$ went *Requires 16K
- *Written in Basic - so it's user modifiable
- *Up to 56 user definable budget categories
- *Printout capability *Much, much more *4K version too

GAME SET I — \$7.95

THREE FAMILY FUN GAMES

- *Seven-Eleven - A dice type game of skill and chance
- *Master Code - Like Master Mind. You've seen the rest, now try the best! *Frenzy - Build words, exercise your vocabulary. *Will run in 4K

PRESCHOOL PAK — \$6.95

Alphabet-Drills your pre-schooler in alphabet recognition. Rewards a right answer. Counter-A drill in counting up to ten. Utilizes hi-resolution graphics. Requires 16K and Extended Basic. This cassette helps preschoolers learn - they think it's a game!

All programs supplied on cassette and shipped postpaid. We pride ourselves on quick shipment of orders. Watch our ads for new Color Computer software.

Sam Mix Software

2424 College N.E.
Grand Rapids, MI 49505



EDUCATIONAL PROGRAMS

(Now in use in several schools)

- (16K Ext. Basic)
- *Math Drill - Designed for teaching addition, subtraction, multiplication and division to the student of any age.
- *Spelling Test - Hear your CC talk to you! An outstanding learning tool. Students love to learn with this program. For any age.
- *Word Drill - Complete package designed by a teacher as a vocabulary teaching aid.

Recommended by teachers as an outstanding learning aid.

\$19.95 each All 3 for \$49.97

CASINO - 3 game pak. 3 Vegas games on one tape. 5 Card Draw * Slots * Acey/Ducey.

Only \$14.95

CONNECT FOUR
Challenging game played either with two players or against the computer. 4K

\$12.95

★LOOKING FOR NEW SOFTWARE★
Add \$1.00 Postage & Handling.
Phone (616) 364-4791 (Evenings).

MOON LANDER

2 Programs - A real treat! Train on "Moon Lander" then move up to "Lander II". An outstanding flying experience. Visit the moon on your CC. Ext. Basic. Reviewers say most realistic on the market today!

\$15.95

JUST RELEASED:

★COLOR COMPUTER DANCING DEVIL★

Watch him tap dance to music. Program your own routines. Youngsters and adults alike love him. Machine language. A Demon of a deal!



\$14.95

ML RABBIT

No serious programmer can afford to pass this up! Make copies of any machine or basic program effortlessly. Even copies programs that automatically execute. Completely automatic. (Caution- Intended to make back-up tapes only).

only \$14.95

— TOP ROYALTIES PAID—
Michigan residents add 4% Sales Tax.

MAZE (From Page 7)

hear the register beep, and it will seem nothing happened. Don't worry. This is because the new area you are looking at is just like the old one. One dead end looks like another. This is particularly a problem with the slow screen, so we've added a second, higher pitched, beep to tell you when your move is completed on the slow screen.

Also, the limit of your forward vision is four squares. Sometimes this will mean that the corridor you're looking down goes farther than you can see. The lesson here is that a dead end that is four squares away may not be a dead end.

The hole is always on the northernmost wall, somewhere. But, since you don't know which direction you're facing when you start, it could, effectively, be on any wall.

The system used here to generate the maze is called "frontier cell." If you're interested in learning more about it, let the RAINBOW know.

The listing:

```

2 '          3DMAZE
3 '          BY
4 '          SCOTT L. BAIN
5 '
6 '          P.O. BOX 178114
7 '          SAN DIEGO, CA
8 '          92117
9 '-----'
10 PMODE 0,1:PCLEAR4:PCLS:CLS
15 POKE65495,0
20 DIM M(11,11),F(50,2),V(5,2)
25 FORI=1TO10:SOUND110,1:NEXTI
30 PRINT@331,"\" /":PRINT@39
5,"/\"":PRINT@364,"3DMAZE"
35 PRINT@0,"PLEASE WAIT 1 MINUTE
   WHILE I CREATE THE MAZE.";
40 FR=0:X=5:Y=5:M(X,Y)=1:FORI=-1
TO1:FORJ=-1TO1:IFI<>0ANDJ<>0THEN
50ELSEIFI=0ANDJ=0THEN50
45 M(X+I,Y+J)=-1:FR=FR+1:F(FR,1)
=X+I:F(FR,2)=Y+J
50 NEXT J,I

```

```

55 CR=RND(FR):X=F(CR,1):Y=F(CR,2)
60 Z=0:FORI=-1TO1:FORJ=-1TO1:IFI
<>0ANDJ<>0THEN70
65 IFM(X+I,Y+J)=1THENZ=Z+1
70 NEXTJ,I
75 IFZ<2THEN95
80 M(X,Y)=-2
85 FOR I=CR TO FR
90 F(I,1)=F(I+1,1):F(I,2)=F(I+1,
2):NEXTI:FR=FR-1:GOTO110
95 M(X,Y)=1:FORI=-1TO1:FORJ=-1TO
1:IFI<>0ANDJ<>0THEN105
100 IFM(X+I,Y+J)=0ANDX+I<0ANDX+I
<11ANDY+J<0ANDY+J<11THEN M(X+I,Y
+J)=-1:FR=FR+1:F(FR,1)=X+I:F(FR,
2)=Y+J
105 NEXT J,I:PRINT".":GOTO85
110 IF FR<>0THEN55
115 X=5:Y=5
120 D=RND(4)
125 TX=10:TY=RND(10):IF M(TX,TY)
<>1 OR TY=5 THEN 125
130 V(0,1)=0:V(0,2)=1:V(1,1)=1:V
(1,2)=0:V(2,1)=0:V(2,2)=-1:V(3,1)
=-1:V(3,2)=0:V(4,1)=0:V(4,2)=1:
V(5,1)=1:V(5,2)=0
135 CLS:PRINT"TURN THE SOUND UP.
":PRINT"PRINT"YOUR OBJECT IS TO
FIND THE HOLE IN THE FLOOR AND E
SCAPE.":PRINT
140 PRINT"USE THE ARROW KEYS TO
MOVE YOUR SELF FORWARD, OR
TURN RIGHTOR LEFT, OR TO TURN AR
OUND.":PRINT"USE THE 'C' KEY TO
CHANGE SCREENS.":PRINT
145 TIMER=0
150 PRINT"WOULD YOU LIKE:":PRINT
"1- EASY TIMER, SIMPLE SCREEN.":
PRINT"2- HARD TIMER, COMPLETE SC
REEN.":INPUT SP: IF SP<>1 AND SP
<>2 THEN CLS:GOTO 135
155 IF SP=2 THEN TL=0:PRINT"NO H
ELPER TRAIL POSSIBLE.":FORI=1TO1
50:NEXTI:GOTO 165
160 INPUT"DO YOU WANT A HELPER T
RAIL":A$:IF MID$(A$,1,1)="Y" THE

```

Peacock Ent.

WE'RE PROUD.....PROUD TO PRESENT

CMAILIST <c>

Bring the POWER of a data base to your Color Computer. CMAILIST is MORE than just a mailing label generator. CMAILIST is a mini-data base for cassette.

THESE ARE JUST SOME OF OUR FEATURES

1. SELECTIVE PRINTING
2. BATCH PRINTING
3. SEARCH ANY OF 6 FIELDS.
4. MAIL LABELS(1-2WIDE)
5. AUTO SAVE
6. CREATES BACK-UP FILES
7. 1YEAR WARRANTY (FREE UPDATES AS RELEASED)

PRICE \$19.95 for 16K & 32K PROGRAMS on SAME TAPE. Special Offer: 20% OFF with this AD. That's \$15.95. Also avail: 4116 200ms DYNAMIC RAMS \$15.00/8

CHECK OR MONEY ORDER (shipping PrePaid) COD (shipping added)

PEACOCK ENT. PHEASANT RUN BOX 494 RD#3 CANASTOTA, NY. 13032 315-697-7147


```

N TL=1 ELSE TL=0
165 IF PAGE=2 THEN PAGE=1 ELSE PAGE=
2
170 PMODE 0, PAGE
175 POKE 65495, 0
180 IF X=TX AND Y=TY THEN 440
185 RESTORE
190 PCLS:LINE(0,0)-(254,190),PSE
T:LINE(254,0)-(0,190),PSET
195 LINE(10,8)-(244,182),PSET,B:
IF M(X+V(D,1),Y+V(D,2))<.1 THEN C9
=1 ELSE C9=0
200 X1=X:Y1=Y:DR=D-1:DL=D+1
205 M(X,Y)=1.1
210 FOR I=1 TO 4
215 X1=X1+V(D,1):Y1=Y1+V(D,2)
220 READ E1,F1,E2,F2,B1,B2,B3,B4
,B5,B6,B7,B8,D1,D2,D3,D4,D5,D6,D
7,DB,CY,CR
225 LINE(E1,F1)-(E2,F2),PSET,B
230 IF X1=TX AND Y1=TY THEN CIRC
LE(126,CY),CR,,.5
235 IF M(X1,Y1)=1.1 AND TL=1 THE
N PSET(126,CY,5)
240 IF M(X1+V(DL,1),Y1+V(DL,2
))<.1 THEN 255
245 IF SP=2 THEN LINE(B1,B2)-(B3
,B4),PSET,B
250 LINE(D1,D2)-(D3,D4),PSET,B
255 IF M(X1+V(DR,1),Y1+V(DR,2
))<.1 THEN 270
260 IF SP=2 THEN LINE(B5,B6)-(B
7,B8),PSET,B

```

```

265 LINE(D5,D6)-(D7,DB),PSET,B
270 O1=X1+(V(D,1)):O2=Y1+(V(D,2
))
275 IF O1<1 OR O1>10 OR O2<1 OR
O2>10 THEN 290
280 IF M(O1,O2)<1 THEN 290
285 NEXT I
290 IF SP=2 THEN LINE(128,8)-(128
,96),PSET,B:LINE(128,98)-(236,
188),PSET,B:LINE(126,98)-(22,180
),PSET,B:PAINT(128,5),5,5
295 IF C9=1 THEN LINE(12,6)-(242
,184),PSET,B:F:GOTO 305
300 LINE(E1+2,F1-2)-(E2-2,F2+2),
PSET,BF
305 SCREEN 1,1
310 POKE 65494,0
315 IF SP=2 THEN SOUND 200,2
320 A$=INKEY$
325 IF A$<>"^" THEN 345
330 IF M(X+V(D,1),Y+V(D,2))<.1 TH
EN 345
335 X=X+V(D,1):Y=Y+V(D,2)
340 SOUND 100,3:GOTO 165
345 IF A$<>CHR$(8) THEN 365
350 SOUND 100,3
355 D=D+1:IF D>4 THEN D=1
360 GOTO 165
365 IF A$<>CHR$(9) THEN 385
370 SOUND 100,3
375 D=D-1:IF D<1 THEN D=4
380 GOTO 165

```

(Continued on next page)

COLOR COMPUTER DISK SYSTEM

A complete disk drive system for the color computer, featuring the Tall Grass Technology Double density, buffered disk controller. This system will support up to 4 5 1/4 in. disk drives with a maximum capacity of 3.2 Mega bytes of storage using double sided 80 track drives. This is a minimum of 4 times the capacity of the "Standard" color computer disk drive system.

DISK OPERATING SYSTEM (CCMD + 9)

This is a full featured "Basic" compatible disk operating system which does "NOT" require extended Basic and will even run on a 4K color computer. It includes a complete dynamic allocation system that leaves no wasted or unused space on the disk. It will automatically repack disk space when files are deleted to reduce file fragmentation and increase access time.

This system features three operating systems in one, the first is a free standing system which has 11 commands for loading, saving, removing, changing, checking, analyzing and executing files on disk. It can be configured to allow any mixed combinations of 35, 40 and 80 track drives.

The second system is a completely supported external access system for interfacing with virtually any program requiring the use of the disk system. It includes 10 functions for opening, closing, reading, writing sequential and random access files. There are also 13 subroutine functions and 7 I/O subroutines accessible to the programmer.

The third system is a Basic interface system which includes 6 direct execute Basic commands and 6 indirect commands which conform to the standard Basic tape & printer I/O commands and allow use of string and numeric variables for disk parameters. Up to 9 files can be active at once, all disk file memory allocation is done automatically at run time. Also, Basic has access to all the free standing DOS commands either directly or under program control.

PRICES:

| | |
|-----------------------------|----------|
| Controller w/CCMD + 9 Eprom | \$159.95 |
| Disk Controller only | \$99.00 |
| CCMD + 9 Dos on 2732 Eprom | \$69.00 |
| CCASMD9 disk assembler | \$34.95 |
| CCEDT9 disk text editor | \$24.95 |
| CCDISS disk disassembler | \$29.95 |
| CCUTLY disk utilities | \$19.95 |
| CDTPRO Text processor | \$39.95 |

Games from Spectral Associates

CGAME1 HI-RES Graphic Game
includes
Space Invaders
Meteroids
Space Wars

\$49.95

CGAME2 mixed game disk
includes
Battle Fleet
Space Traders
Adventure

\$39.95

5566 RICOCHET AVE.
Las Vegas, Nv. 89110

CER-COMP (702) 452-0632

All Orders Shipped From Stock
Add \$1.00 Postage - MC/VISA Add 3%



COLORSOFT™

** Quality Software At Affordable Prices For the TRS-80* Color Computer**

* Games

* Educational

* Home/Personal

* Financial

We Also Offer: *Custom Programming *Royalties For Software

Over 50 Software Items Currently Available

Documentation and a Limited Guarantee with all COLORSOFT™ Software.

*****4K Color BASIC Programs*****

INVADERS: 10 Skill levels, phaser sound and exploding bombs \$13.95
DUMP: Explore the memory of the color computer—output to screen or printer 8.95
HANGIT: Guess the word or the creature loses! 7.95
TAG: 2 player game of chase. Fast action and fun 10.95

*****16K Color BASIC Programs*****

CASINO: One-armed bandit, blackjack, and dice games \$12.95
BLACKBOX: Find the hidden points by probing the blackbox with a projectile—a challenging game of deductive reasoning 9.95
METRIC CONVERTER: Menu driven metric to English/English to metric conversions 9.95
DISASSEMBLER: Disassemble machine language programs (screen or printer) 13.95
AUTO MINDER: Keep track of fuel usage, tune-ups, oil changes, etc., creates and maintains cassette data files for multiple autos 10.95

*****16K Ext. Color BASIC Programs*****

FURLONG DERBY: A horse of a different color racing game for 1 to 3 players \$9.95
ESCAPE: Intermediate adventure with GRAPHICS. The player must find and decipher various clues to escape. Graphics give player the feel of being there 15.95
SASPU: Beginner's adventure game—the player must find and destroy the deadly mutant in a genetic nuclear research center. Each game is randomized 8.95
PIRATE TREASURE: Advanced beginner's adventure—the player must find the pirate's treasure which is hidden in a cave of over 40 rooms 11.95
ADVENTURE COMBO: Combination of SASPU and PIRATE TREASURE 16.95
FLIPUM: Color computer version of the OHELLO™ type games 9.95
FLIGHT SIMULATOR: Fly to the airport with instruments only (joysticks req'd). The player can set difficulty to challenge his flight experience 11.95
PEEK 'N' SPELL: Flashes word or letter on screen for children's spelling drill—New word files can be created and stored on cassette tape 10.95
CAPITALS COMBO: Name the capitals drill for the United States, Americas, Africa, Europe/Asia, and Mid East/Asia 25.95
MATH DERBY: Math drill in a horse race game for 1 to 3 players variable difficulty 11.95
LOAN: Amortization schedules with breakdown of monthly payments (avail. in 4k) 10.95
STOCK ANALYZER: Keeps track of stock prices and maintains portfolio data base includes additional program for projecting price trends 16.95
COLOR CUBE: CoCo version of the popular cube puzzles. Features include solution by computer and saving partially solved puzzle on tape 17.95

Handling charge is \$2.25 on software orders under \$25. Visa and Mastercard accepted (include expiration date). Orders paid by cashier's check, money order, or bankcard are shipped within 48 hours. Personal checks require 1 to 2 weeks to clear. No COD orders.
SOFTWARE SOLD IN THE U.S., CANADA, AUSTRALIA, MEXICO, AND PUERTO RICO ONLY PAYABLE IN U.S. DOLLARS

Send \$1 for catalog containing full descriptions of all available software and receive a \$2 discount coupon good on first order. Free catalog with an order from this ad.

BLANK CASSETTE TAPES

*Premium 5 Screw Construction *Digital Data Quality *Low Noise *Made in USA

1 Doz. C-10 length \$8.00 1 Doz. C-30 length \$11.00

Shipping Charge: \$2.00 per Doz. UPS/\$3.50 per Doz. First Class Mail

Individual Storage Boxes (sold only with cassettes) 2.40 per doz.

!!! NEW !!!

CASSETTE CADDY

!!! NEW !!!

Put an end to misplaced tapes and a cluttered work area by using our hinged top, smoked-plastic storage containers which hold 12 tapes in one easy to find location

each only \$5.49 plus \$1.50 shipping
 or \$3.95 with purchase of one dozen cassettes (no shipping charge on caddy)

UPS cannot ship to P.O. Boxes

Texas residents add 5% to cassette and storage unit orders

Foreign orders include shipping at 16 oz. for tapes / 9 oz. for caddy / 13 oz. for boxes

SEND ORDERS TO: COLOR SOFTWARE SERVICES
 P.O. BOX 1723
 GREENVILLE, TX 75401

QUANTITY DISCOUNTS AVAILABLE DEALER INQUIRIES INVITED
 *TM of Tandy Corp. **TM of Gabriel Ind.

MAZE (From Page 9)

```

385 IF A$="C" THEN SOUND200,2:CL
S:GOTO 150
390 IF A$<>CHR$(10) THEN 320
395 SOUND 100,3
400 D=D-2:IF D<1 THEN D=D+4
405 GOTO 165
410 GOTO 320
415 CLS:POKE65495,0:GOTO50
420 DATA 58,146,196,44,26,16,28,
174,224,20,220,170,10,44,58,146,
244,44,196,146,166,16
425 DATA 90,122,164,68,74,54,78,
136,176,56,172,134,58,68,90,122,
164,68,196,122,134,12
430 DATA 106,110,148,80,102,74,1
04,116,152,74,150,116,90,80,106,
110,148,80,164,110,116,8
435 DATA 114,104,140,86,110,82,1
12,108,144,82,142,108,106,86,114
,104,140,86,148,104,107,6
440 CLS:PRINT "ESCAPE! TIME=";T
IMER:PRINT:PRINT
445 FOR I=10 TO 1 STEP -1:FOR II
=1 TO 10
450 IF I=TX AND II=TY THEN PRINT
"O"; ELSE IF M(I,II)=1 THEN PRI
NT "X"; ELSE IF M(I,II)=1.1 THEN
PRINT "*"; ELSE PRINT " ";
455 NEXT II:PRINT: NEXT I
460 PRINT@209,"X= UNEXPLORED":PR
INT@241,"*= EXPLORED":PRINT@273,
"O= ESCAPE":PRINT@448,"";
465 INPUT"ANOTHER MAZE"?A$:IF MI
D$(A$,1,1)="Y" THEN RUN
470 POKE65494,0
475 END

```

Followup...

WHAT...MORE POLYGON?

We honestly know of no single program that has generated as much interest as R. Foulke's *POLYGON*.

In the continuing saga of this program comes this little gem from Roland Wong of West Covina, Calif., who adds an enhancement which will show the value of the variable M in the upper left-hand corner of the screen so you can note it down and use it to print out the particular pattern the program generates.

Here's the listing:

```

1 'POLYGON FOLLOWUP
2 'BY R. FOULKE - MODIFIED BY R.
  C. WONG
5 PMODE 4,1:PCLS:SCREEN1,1
10 M=RND(90)
20 X$=STR$(M)
40 B$=RIGHT$(X$,1)
50 A$=MID$(X$,2,1)
60 IF M<10 THEN A$="0"

```

(Continued on Page 12)

**
DSL**ML Rabbit**

A tape backup program
for the C.C. Completely
automatic \$14.95

WORD CC7

Word processing for the
C.C. Many features that
are found in dedicated
systems. \$19.95

**
DSL**ULTRA-MIND**

THREE game pack - Features ULTRA-
MIND also includes EVADER, HANGMAN
All three for 4K & up.....\$9.95

FROM Great X.P.T

BCXCARS (Craps) - High resolution
dice game Ext.16K.....\$14.95
SEABATTLE - Battleship for the C.C.
Two player, 16K Std.....\$14.95

BRAND NEW by Dave Hooper (Vipers)**Geo-Studies**

Combines the fun of arcade games
with the learning of geography.
Find the State, Country, or Capitol the computer asks for press the
fire button, TA-DA you got it, or OH-OH missed. Great fun uses all
the power of the C.C. Extended Basic & Joystick required.
Four different studies USA CANADA EUROPE AUSTRALIA \$19.95 each
TWIN PACKS USA/CANADA EUROPE/AUSTRALIA \$35.95 each package
ALL FOUR GEO-STUDIES.....\$ 68.00

HARDWARE

RAM SLAM -ALL the soldering has been done for you. Just plug in the
upgrade kit you need. 15 min. instalation, ONE year wnty.
4-16K....\$25.00 16-32K....\$49.95 4-32K....\$74.95

Modem Kits -Acoustic couple, Originate/Answer, All components & circuit
board. You build it & supply case \$59.95 w/pwr.supply \$74
-Budget version Originate Only. You supply mic. & spkr. case
\$29.95 w/pwr. supply \$39.95

Blank tape-C10 cassette tapes w/leader .75 each 10 for \$6.00

POLYGON (From Page 10)

```

70 GOSUB1000
75 DRAW "S8BM3,15"+N$(VAL(A$))+N
$(VAL(B$))
90 PI=3.14159
100 FOR T=0 TO 2*PI STEP PI/75
110 R=COS(M*T)*95
120 X1=COS(T)*R+128:Y1=SIN(T)*R+
96
130 A=T+PI/3
140 R2=COS(M*A)*95
150 X2=COS(A)*R2+128:Y2=SIN(A)*R
2+96
160 LINE (X1,Y1)-(X2,Y2),PSET
170 NEXT T
180 FOR T=1 TO 500:NEXT
190 GOT02
1000 N$(1)="BR4NU4BR"
1010 N$(2)="BR2U2R3U2NL3BD4NL3"
1020 N$(3)="BR2R3U2NL2U2NL3BD4"
1030 N$(4)="BR2BU2NU2R3U2D4"
1050 N$(5)="BR2R3U2L3U2R3BD4"
1060 N$(6)="BR2U4NR3D2R3D2NL3"
1070 N$(7)="BR2BU3UR3D4"
1080 N$(8)="BR2U4R3D2NL3D2NL3"
1090 N$(9)="BR2BU2NR3U2R3D4"
1095 N$(0)="BR2U4R3D4NL3"
1100 RETURN

```

BACK ISSUE AVAILABILITY

Back copies of ALL issues of the RAINBOW will soon be available.

All back issues sell for the single issue cover price -- which is \$2 for copies of numbers 1-8 and \$2.50 for copies of numbers greater than 8. In addition, there is a \$2.50 per order charge for postage and handling. This charge applies whether you order one back issue or all of them.

For ease of reference, issues 1-5 are stapled together as one packet, all on white paper. These are a special reprint. Issues 6 and 7, which have been out of stock for some time, are available as a single issue, also on white paper in a reprint form. However, we will break the packets and ship whichever ones you wish. All back issues now available would be \$18.50, plus \$2.50 postage and handling -- a total of \$21. VISA and MasterCard accepted.

Due to heavy demand, we suggest you order the back issues you want now. There is the possibility they will be again out of print if you wait.

All back issues are sent First Class Mail.

-- Available June 1, 1982 --

True Lower Case for the TRS-80C Color Computer

Now you can have true lower case letters on your Color Computer rather than reverse video. The Lower Case Adapter (LCA-47) provides an enhanced character set plus lower case with true two-dot descending tails for characters such as g, j, p, q and y. Plus, you have your choice of either the normal black characters on a green background or green characters on a black background at the touch of a switch! Your CRT screen will still display 16 rows of 32 characters. The lower case characters are available to Basic programs and machine language programs alike. Text editors and word processors never looked better! The LCA-47 is compatible with all software written for the TRS-80C. It has no affect on any of the semi-graphics or full-graphics modes. Custom designed character sets are available as an option. The LCA-47 is a small printed circuit board that simply plugs into the computer's main printed circuit board under the RF shield. No cutting or soldering is required. The LCA-47 comes assembled, tested, and guaranteed for 1 full year. Note: installation is simple but does require opening your computer which will void the Radio Shack warranty. The LCA-47 will NOT fit inside your computer if Computerware's "16 Plus" memory board is already installed. P.S. -- The LCA-47 also works great with the Micro-Chroma 68 Kits!

Price: \$75.00 Available: June 1, 1982 from:

Micro Technical Products, Inc.

814 W. Keating Ave.
Mesa, AZ 85202
Phone: 602-839-8902

Add 5% shipping. Overseas add 10%. Arizona residents add 5% for tax. MC and Visa welcome.

Dealer inquiries invited.

MOTION PICTURE PROGRAMMING--THE DETAILS

By Arnold Pouch

In last month's issue of the RAINBOW, you read about what a powerful tool Motion Picture Programming (MPP) can be for CoCo programmers who are still using commands like DRAW, PSET, COLOR, LINE and PAINT to crate graphics. MPP is a method of producing superior graphic programs packed with action that does not necessitate long hours with BASIC's graphic commands.

Superior Graphics Software offers these programming tools to CoCo users. Our CoCo is a special and powerful computer and has vast amounts of untapped capabilities. MPP is one of them, and it eliminates the need to produce what I call Big Ugly Graphis Moving Everywhichway to show motion.

All I ask in return is that you never again produce graphics with B.U.G.M.E.'s. Mark your programs with MPP so we will all know who spent the time and artistic effort to create them this easy, better, way.

Here are all the necessary tools you need to produce MPP. This tutorial is presented in three sections:

- I. Conversion Instructions
- II. Diagram
- III. MPP Course

CONVERSION INSTRUCTIONS

These instructions are based on Chromasette's excellent DRAWER program (August, 1981). We show here how to convert DRAWER to MPP DRAWER.

For 16K Extended Color Basic, make the following changes:

```
10 Change CLEAR10 to CLEAR20
14 Remove PCLS
16 Remove FOR...NEXT
20 Insert after A$=INKEY$:
IF A$=<" THEN250 ELSE IF A$=">"
THEN280 ELSE
228 Delete PRINT"TAPE":PRINT"
SAVE OR LOAD":
Insert: PRINT "MPP TAPE
INPUT/OUTPUT":PRINT" INPUT =<":
PRINT " OUTPUT = >":
```

Add the following lines:

```
250 CLS:PRINT:PRINT"TO LOAD MPP
PICTURE TAPES":PRINT:PRINT"READY YOUR
MPP TAPE IN CASSETTE":PRINT:INPUT
"PRESS <ENTER> WHEN READY";ZZ
```

```
252 SCREEN1,SC:CLOADM:GOTO200
```

```
280 CLS:PRINT:PRINT"TO SAVE MPP
PICTURES TO TAPE":PRINT:PRINT"READY
YOUR CASSETTE WITH FRESH TAPE AND
PRESS RECORD AND PLAY. DON'T FORGET
TO CHECK THE VOLUME"
```

```
282 PRINT:INPUT"HOW MANY GRAPHICS
PAGES?
4-PAGES
5-PAGES
6-PAGES";ZZ
```

```
284 PRINT:INPUT"TYPE NAME OF MPP
PICTURE ";ZZ$
```

```
286 CLS:PRINT@236,"STANDBY"
```

```
288 CSAVEM ZZ$,1536,1536+(1536*ZZ)-1,
44553
```

```
290 SCREEN1,SC:GOTO200
```

Also, delete lines 156-168 and 170-178.

For 32K, make these additional changes:

```
10 change PCLEAR6 to PCLEAR8 and
remove CLEAR20
```

```
12 Change MP=6 TO MP=8
```

(Continued on next page)

TRS-80 COLOR COMPUTER SPECIALISTS



COLORFORTH

A NEW, HIGH LEVEL PROGRAMMING LANGUAGE IS NOW AVAILABLE FOR YOUR COLOR COMPUTER. AREN'T YOU TIRED OF THE SLOWNESS OF PROGRAMMING AND THE EXECUTION OF BASIC PROGRAMS? FORTH WILL CUT PROGRAMMING TIME IN HALF AND WILL SPEED THE EXECUTION TIME AS MUCH AS TEN TIMES THAT OF BASIC. "COLORFORTH", (THE VERSION OF FORTH FOR THE COLOR COMPUTER) DOES NOT REQUIRE EITHER EXTENDED BASIC OR DISK SYSTEM. A MINIMUM OF 16K IS NECESSARY. WHEN YOU PURCHASE "COLORFORTH", YOU RECEIVE BOTH CASSETTE AND 85/DISK VERSIONS. THIS MEANS NO EXTRA EXPENSE WHEN YOU UP-GRADE YOUR SYSTEM. "COLORFORTH" ALSO INCLUDES AN EDITOR, CSAVEN COMMAND, A PRINTED INSTRUCTION AND OPERATION MANUAL, AND MUCH MORE!

BOTH VERSIONS AND MANUAL, ALL FOR ONLY..... \$49.95

ARMADILLO BUG MACHINE LANGUAGE MONITOR

"ARMADILLO BUG" IS AN EXCELLENT SYSTEM FOR BEGINNERS TO LEARN TO WRITE AND DEBUG MACHINE LANGUAGE PROGRAMS. THIS PACKAGE INCLUDES: MEMORY EXAMINE AND CHANGE; MOVE; PUNCH AND LOAD; FILL COMMANDS; AND MORE! DOES NOT REQUIRE EXTENDED BASIC. RUNS IN 16K. COMES COMPLETE WITH PRINTED MANUAL.

JUST..... \$14.95

OTHER ITEMS OF INTEREST

"STARTING FORTH", A BOOK BY LEO BRODIE. THE BEST INTRODUCTORY FORTH TEXT AVAILABLE. 384 PAGES. SOFT COVER..... \$16.00

"COMPUTERS FISS ME OFF". WEAR THE OFFICIAL PROGRAMMERS BADGE. LARGE 2-1/4 INCH YELLOW BUTTON SAYS IT ALL!..... \$1.50

DEALER & AUTHOR INQUIRIES INVITED

ALL ITEMS ARE POST PAID IN U.S.

TEXAS RESIDENTS ADD 5%

*TRS-80 IS A TM OF RADIO SHACK/TANDY CORP.

Armadillo Int'l Software

P.O. BOX 7661 PHONE (512) 459-7325

AUSTIN, TEXAS 78712



226 Change both occurrences of "1-6" to "1-8"
 282 Change and add: 6-PAGES?
 7-PAGES?
 8-PAGES";ZZ

MPP COURSE

First of all, it is essential that you familiarize yourself with the full instructions which accompany Chromasette's *DRAWER* program. If you forget them, use the "H" for HELP command. It will not only give you a rundown of the commands, but will also tell you what the last command you gave was and show the exact X-Y coordinate of the cursor.

To help simplify these instructions, we will assume you will use PMODE 3,1 on a four-page MPP picture with two extra pages of Motion Modifiers (MM's). Your 4+2 pages will reside in memory locations 1536 through 10751 (PCLEAR 6). All references to higher memory addresses for 32K Extended Basic (and for Disk) will be omitted.

Now, take a look at the diagram. It is laid out in three sections: An MPP memory map is in the center; the three steps necessary to create MPP are on the left; and the Input/Output routines which will allow you to start and stop MPP drawing are on the right.

Connecting lines between the flowcharts and the memory map have been removed for the sake of clarity. Instead, we show the exact memory addresses for the START and END above each I/O box.

Now, to MPP...

STEP 1 - DRAW...

1. Place the converted *DRAWER* in your recorder, type PCLEAR6, and CLOAD it. RUN the program after it loads.

2. You will see blank memory pages 1-4. It's a mess. Press the <K>lear key to clear the screen. Now press the <P>age key and press 3. You have

switched the screen to pages 3 through 6. Pages 5 and 6 are still a mess, so press the K key again. Now that you have cleaned up the pages, press P and 1 to go back to pages 1-4.

3. Well, don't just sit there -- DRAW! Use the arrow keys, since the joysticks are difficult to control.

4. I don't see anything! Do something. Why don't you try a round clock face? Ah. That's better.

5. Let's draw the Motion Modifiers (MM's) now. These are simply repetitive drawings of a certain section of your picture where you want action to take place. These drawings are each a little different from the previous one and show a "time/motion" relationship -- such as 10 pictures of a clock hand moving from 15 minutes past the hour to 25 past the hour. MM #1 shows the clock hand at 16 after, MM #2 at 17 past, and so on up to MM #10 at 25 past.

6. Sounds like a lot of tedious work, right? It is, but your converted *DRAWER* program will do most of it for you automatically. We don't want the MM's to be visible, so press P and 3. Now press <I>mage copy and follow the menued instructions to copy and move as many MM's as you think you will need for a smooth animation. When you <P>ut your MM's on pages 5 through 6, set them in neat rows so you can later program to GET them with just one GET command in a FOR...NEXT loop.

7. With the Image copy, you now have 10 pictures of a section of a clock showing 15 minutes after the hour. Put that cursor to work now -- and change each picture to the correct time. If your picture is complex, you can use as many MM's as you like to fill all of pages 5 and 6.

8. Getting tired? Just one thing before we can stop. Use the <H>elp command and your cursor to find the X-Y coordinate for all your GET MM's and their X-Y PUT coordinates in your

COLORTERM(c)

The 16K Color Computer* as an intelligent terminal with 51 or 64 columns by 21 lines and lower case!

- 300 or 110 Baud
- user programmable keys
- automatic repeat when key is held down
- dump your files to host
- reverse video
- partial screen clear
- 4-way cursor control

- any data format (commercial systems, TSO, bulletins etc.)
- memory buffer for incoming data—save buffer—scroll through buffer
- preserve a "window" of any size; new material scrolls through remainder of screen.

- encode data for more secure storage
- macro buffers for often-used output
- patch the 51 or 64 column display to your own programs running above 9168 (23 D0 hex)

Cassette and Manual \$34.95 (U.S.) \$40.95 (Canadian)

Visa, Master Charge, Money Order

Martin Consulting, 94 Macalester Bay, Winnipeg, Manitoba, R3T 2X5 Canada

*T.M. OF TANDY CORP.

master MPP picture. Write them down neatly as follows:

```
MM NAME GET (X,Y)-(X,Y) P number (PMODE)
MPP NAME PUT (X,Y)-(X,Y) P number (PMODE)
" " " " " " " " " " " " " " " " " " " " " "
```

9. We can stop the processes for Step I at any time by pressing the ">" key and following the menu instructions. This procedure will automatically make an MPP picture tape.

10. Test yourself now to feel secure before you shut off the computer. Press "<" and follow the menu instructions to load your MPP picture tape back into the CoCo. Want to be sure its doing this? Draw a line through your picture and then load the tape in. You'll see the line disappear.

STEP II - PROGRAM

1. You must have produced an MPP tape in Step I before you can use Step II. This process will mess up your original picture as it GETs and PUTs your MM's. You may want to reload a clean picture several times during the process and you must have a clean picture in Step III to produce your final tape.

2. Before you start programming, you may wish to add these little utilities to the CoCo's memory:

```
9998 GOTO 9999 (This will hold the program on the screen)
9999 END
10000 PCLEAR6:PMODE3,1:SCREEN1,0:CLOADM (You RUN10000 and it
will visibly load your MPP picture tape whenever you
want a fresh picture)
10001 GOTO10001
20000 PMODE3,1:SCREEN1,0:GOTO20000 (You RUN20000 and your
picture will be displayed any time)
30000 PMODE3,3:SCREEN1,0:GOTO30000 (You RUN30000 and your
MM's will be displayed at any time)
```

3. Begin all your MPP BASIC programs with the following lines:

```
1 ' MPP BY (YOUR NAME)
2 ' SPRING, 1981
3 '
4 ' POKE27,XXX:POKE28,XXX:POKE29,XXX:
POKE30,XXX:POKE31,XXX:POKE32,XXX
5 PMODE 3,1:SCREEN 1,0
```

This will allow you to RUN from the start of the program and see your MPP picture again while you are programming and debugging. Your program starts at Line 6.

4. Use normal BASIC and normal techniques. But what a blessing! No more long DRAW strings to fumble with and try to set blindly. No more figuring where SETs and RESETs should

go. No more COLOR, PCLS, or program-slowing PAINTs. Your graphic work was all completed in Step I. Your program only needs GETs and PUTs and you already have them written down with their addresses.

5. Here are some helpful hints in the programming:

A. Try DIMensioning only one array for all GETs and PUTs, using the same one over and over again.

B. Write all GETs and PUTs inside FOR...NEXT loops to step off the motion.

C. Write the MM's to maximum speed and slow them down later with time delay loops, PLAY commands and, even, GET/PUT loops inside GET/PUT loops.

D. Make your GETs and PUTs as small as possible to get the job done.

E. If you PUT garbage, remember GET and PUT must be the same exact size. The array doesn't matter as long as it is big enough for the largest GET/PUT.

F. DIMension your arrays big enough while programming and then EDIT them down to size when you're finished.

G. Keep your PMODE page
(Continued Next Page)

sugar
& software

introduces...

Silly Syntax

a sensational and educational version of a popular party game for the TRS-80 Color Computer...

For 1 to 10 players. Load a story into the computer. The players are asked to supply a noun, verb, part of body, celebrity, etc. which the program uses to complete the story. The story, which is displayed when all words are entered, will be hilarious. Silly Syntax requires Extended Basic. For \$19.95, you get a user guide and a tape containing the Silly Syntax game and 2 stories.

You can create your own stories or order story tapes from the selection below.

Silly Syntax stories - Ten stories per tape.

| | |
|-----------------------|----------------------------|
| SS-001 -> Fairy Tales | SS-004 -> Current Events |
| SS-002 -> Sing Along | SS-006 -> Adventure/Sci-Fi |
| SS-003 -> X-rated | SS-007 -> Potpourri |

Each story tape is \$9.95, 10% off for 3 or more story tapes.

Ohio residents add 5.5% sales tax.
Add \$1.00 per cassette for postage and handling.
Dealer inquiries invited.

Sugar Software
2153 Leah Lane
Reynoldsburg, Oh 43068
(614) 861-0565

TRS-80 is a trademark of Tandy Corp.

MPP (From Page 15)

starts set correctly. Changing them will not affect your picture, only SCREEN can do that.

6. If your programming is finished, or you just want to take a break for a day, you can CSAVE "MPPBASIC" any time you wish to stop. You will now have two tapes saved, your picture tape and your basic tape.

7. You can restart at any time from this point by reloading the two tapes. For the picture tape, type in PCLEAR6:CLOADM and for the program tape just CLOAD.

STEP III -- COMBINE

1. When your picture tape and your program tape are completed to your satisfaction, load them both into memory (as in the paragraph above) but **DO NOT RUN OR EXEC THE PROGRAM!**

2. Now, your pictures reside in memory in locations 1536 through 10751 and your program is located in memory starting at 10752 (because we PCLEARed & before it was loaded). We do not know where the end of the Basic program is located, and this is what we have to find out.

3. Follow these steps carefully:

| | |
|----------------|-----------------------------------|
| Type ?PEEK(27) | the answer will be your A value |
| Type ?PEEK(28) | the answer will be your B value |
| Type ?HEX\$(A) | the answer will be your A\$ value |
| Type ?HEX\$(B) | the answer will be your B\$ value |
| Type ?%HA%B\$ | the answer will be your AB value |

4. You now have everything you need to finish your MPP. Go to Line 4 in your Basic program, where you put in the X's after the POKEs, and substitute the values you just found to make the line operational:

```
4      POKE27,A:POKE28,B:POKE29,A:
      POKE30,B:POKE 31,A:POKE32,B
```

5. Place a fresh tape in your recorder, set it to play and record, and type in CSAVE "MPPNAME", 1536,AB,44661. Then press <ENTER> and you will make a complete MPP tape.

Once you have made a copy, as in Number 5 above, turn your CoCo off, let it sit for about 15-30 seconds and turn it back on. Place the newly made tape in the recorder, press PLAY and type in PCLEAR6:CLOADM:EXEC. The tape will load and the program will auto-start with your MPP graphics in motion!

Next month, we'll list out an MPP program to show you how one type of graphic can be done.

TRS-80* COLOR COMPUTER*

- 16K Extended Basic, Menu-Driven, Well-Documented, Easily-Modified.
- For either cassette or diskette systems (Be sure to specify).
- Place an order of at least \$40 and get one extra of your choice free.
- Orders shipped on cassette - Add \$5 for shipment on diskette.

-FURST-

Date Element Dictionary driven File Update and Retrieval SysTem. Create and maintain files according to your specifications. Ideas for applications included.\$25

-MAILING LABELS-

Generate and maintain mailing label records. Selectively print desired quantities. Can keep several label files if desired. Designed for Printer VII, easily modified. \$20

-REPORT WRITER-

Used in conjunction with FURST to selectively format reports on your printer. Includes headings and total capabilities.\$15

-EXERCISE PLANNER-

Build and maintain complete exercise schedule for regular and/or weight programs. Display guides you through daily-calculated routines. Print complete schedule if desired.\$15

-DISK DIRECTORY PRINT-

For diskette users only. Get hard copy of disk directories on your printer for easy use and reference. Only \$5

Send check or money order to:

LAND SYSTEMS

P.O. Box 232
Bellbrook, Ohio 45305

*TRS-80 and COLOR COMPUTER
are Trademarks of Tandy Corp.

ACTION GAMES

The fastest growing producer of computer games for
your 6809 has the products you have waited for!!

NEW!

**CAVE
HUNTER**

**ARCADE GAMES FOR
THE COLOR COMPUTER**

**COLOR
BERSERK**

Fast paced action • Super Hi-Res Graphics
Dynamite sound effects • Runs in 16K of memory

These games will astonish you with their Detail and Quality.
They set a standard for others to follow.

— ADVENTURES —

Calixto Island • The Black Sanctum

Highly acclaimed by reviewers • Challenging situations
Fast, efficient machine language • Runs in 16K of memory
Save game in progress

| | |
|---|-------------|
| Adventures on 5¼ TSC FLEX disc (specify 6800 or 6809) | ea. \$24.95 |
| Both adventures on single disc | \$39.95 |
| Adventures for color computer | ea. \$19.95 |
| Color Berserk for color computer | ea. \$24.95 |
| Cave Hunter for color computer | ea. \$24.95 |

Shipped prepaid in continental U.S. California residents, please add 6% tax.



— MORE COMING SOON —



MARK DATA PRODUCTS

23802 Barquilla, Mission Viejo, CA 92691 • (714) 768-1551

TRS 80 IS A TRADEMARK OF TANDY CORP.

PIPELINE

PIPELINE

Probably the most successful single BBS in the CoCo world is the Connection-80 of Woodhaven, N.Y., operated by Bob Rosen. The BBS' first anniversary was on March 23 and Bob reports that more than 15,000 calls have come in to his system. Remember, Connection-80 is free and can be reached at (212) 441-3755 via terminal. Bob, who is the System Operator, can be contacted in person at (212) 441-2807. Connection-80 has been a real service to CoCo users and we salute Bob and his service.

We feel constrained to point out that the *SAWNET* reviewed in last month's issue is a 4K program. Author Britt Monk mentions this to us by way of saying he believes we should not have been so unkind to his graphics in the review. We certainly see his point and pass it along to you. And, for the record, *SAWNET* is one of the few machine language programs available for the 4K CoCo.

Does anyone really think the CoCo is soon headed for oblivion? Guess not and, for sure, here's some new proof from Tandy. In a thick batch of news releases -- complete with photographs -- Tandy is announcing a whole stable of educational software expressly written for CoCo. Among the most important: An agreement with Harper & Row publishers (a big time outfit) calling for H&R to develop and market educational courseware for schools. Judging by the large number of CoCo-related products, including a series of packages in cooperation with Children's Television Workshop (the people who brought you *Sesame Street*, *The Electric Company* and others), we'd say CoCo is only starting to make its impact felt in the market!

Speaking of big-time news on CoCo, we hear a report that Walter Cronkite's *UNIVERSE* program will feature graphics by CoCo next fall. This, we understand, isn't a one-time shot -- but a continuing exposure of our favorite computer throughout the year-long series on CBS.

We were asked the other day whether it would be possible to save a BASIC program with CSAVEN and then load it back in and have it be a machine language program. The answer is simply, "no." Through use of a program called a compiler, however, you are able to convert BASIC into machine language. We did a little checking around and hear that there are at least a couple of firms "working on" a compiler for CoCo. We'll keep you abreast of developments.

Nelson Software is shipping its *SUPER COLOR WRITER* program and says that an updated version, called *SUPER COLOR WRITER II* will be available by the first of April. Daniel Nelson says it's a "guarantee" that *SCW II* will be introduced on that date.

Armadillo Software says it has a *FORTH* program available on tape or disk. Two exceptional things about their announcement. First, they'll send tape and disk version for the same price ("so if you don't have a disk yet, you'll be all set when you get one"). Second, Armadillo will customize its program for any disk system you're using.

And, speaking of "other" disk systems, Cer-Comp is marketing a full function disk operating system for the TallGrass Technology disk controller. There are three systems in one package: A free-standing disk

system for use without the BASIC ROM system; a fully supported external system that interfaces with assemblers, editors and other types of programs; and a system which interfaces with Basic and Extended Basic. The system will work even with a 4K machine and uses only a little over 1K. Watch for a review.

Missing your monthly dose of fantasy-role playing game aids? Author John Urban hooked up on the losing side of the U.S. Postal Service this month. The series will continue next month.

The first computerized encyclopedia? Its available from Moses Engineering and comes on 48 cassette tapes. We know Roger Olsen will be pleased to note that the first item is reported to be "aardvark."

Radio Shack is now marketing a voltage spike regulator through all its retail stores under the familiar Archer brand.

UPDATE: Last month we asked whether anyone had received any software from Seebree's Computing. At press time, one reader wrote in to say he had.

By the by, we suggest you be sure to read advertisements carefully before you order. Most all will say what version of CoCo they are written for, and you should be sure they will run on yours. As always, the dishonest few make trouble for the rest of us ... but since it is easy to copy programs, it is understandable why software houses won't usually refund money to people who want to return programs because they might not be "what I expected."

An Amazing Offer. . .

Now Available!

TRS-80*

COLOR

COMPUTER

* 32K

* Extended Color Basic

* 1.1 ROM

* 'E' Board

* Full 90-Day Warranty

For ONLY... \$539

Send check, Money Order, Visa or MasterCard Number to:

CLIFF'S COLOR CORNER
Rt. 4, Box 248
Floyd's Knobs, IN 47119

*Trademark, Tandy Corp.

Home Finance...

**COLOR BILLBARS
HELP CHART SPENDING**

By Mark S. Mosty

This program will allow you to produce graphic displays of amounts spent in various budget categories. It should be very helpful in comparing expenses from month to month.

I became interested in writing **COLOR BILLBARS** through general dissatisfaction with other home finance programs which failed to provide the user with comparative graphics or hard copy.

I use the program each month when I have finished balancing my checkbook and setting up next month's budget. The program is written in Color Basic and will, of course, run under Extended Color Basic as well. It requires 16K and uses about 5200 bytes of memory. I use a Line Printer VII and the printer routines are coded accordingly.

To adapt this program to your use, make the following changes:

1. Account names are located in lines 230-270 and 470-510.

2. Change the divisors to suit your needs by adjusting the "D" values in lines 470-510, using the following formula:

-- Take the highest value in the desired range (example, 500)

-- Divide by 25 ($500/25=20$) and use this value for your divisor.

3. Change the Scale Values in lines 440-450 to suit the range you have selected.

4. Make any necessary changes in the printer routine in lines 1360-1590.

COLOR BILLBARS can be adapted for a variety of uses, such as incorporation into a checkbook balancing program to provide graphic display of key accounts or to display virtually any numerical information.

The listing:

```
10 '
20 ' COLOR BILLBARS
30 '
40 ' BY MARK S. MOSTY
50 ' 714 LEE ST.
60 ' KERRVILLE, TEXAS 78028
70 '
80 ' PRINT FORMATTED FOR LPVII
90 '
100 DIM A(5,12)
110 ' INPUT NEW YEAR
120 CLS:PRINT@99,"IS THIS A NEW
YEAR? (Y/N)"
```

```
130 GOSUB 170
140 IFZ$="Y" THEN180
150 IFZ$="N" THENGOSUB190:GOTO290
160 GOTO120
170 Z$=INKEY$:IFZ$<>" THEN RETURN ELSE 170
180 CLS:PRINT@99,"TYPE NEW YEAR.
.. " ; INPUTY:GOS
UB190:GOTO290
190 ' MAIN MENU
200 CA=255:CB=207:CC=191:CD=159:
CE=239
210 CLS(6)
220 PRINT@72,"WHICH ACCOUNT...?"
;
230 PRINT@104," 1. LCRA/LSG
";
240 PRINT@136," 2. PHONE CO.
";
250 PRINT@168," 3. FOOD
";
260 PRINT@200," 4. GASOLINE
";
270 PRINT@232," 5. UTILITIES
";
280 RETURN
290 PRINT@264,"OR...
";
300 PRINT@296," 6. READ TAPE
";
310 PRINT@328," 7. SAVE TO TAPE
";
```

(Continued on next page)

Programs For Kids!!!**NAME THAT SONG-16K-EXT. \$10.00**

This new program contains 72 children's songs to entertain you and your children. 2 levels of difficulty. Hours of fun.

CIRCUS ADVENTURE -16-K \$10.00

Adventure game on a child's level containing many graphics, songs and surprises. Non-frustrating, yet still challenging.

READING TWO-PACK -4-K \$10.00

POETRY AND SILLY SENTENCES : Any child can create his own original reading material about familiar people and things

APARTMENT MYSTERY -4-K \$6.00

A simple adventure-mystery game that familiarizes children with using directions. Try to find the secret treasure!!!

THE AMAZING WIZARD -4-K \$6.00

Ask the WIZARD any question. He blinks and thinks. Read his amusing answers. Is he telling the truth? Who knows???

FREE EXTRA PROGRAM ON TAPE WITH ORDERS OF \$16.00 OR MORE!

COMPUTER ISLAND

DEPT. R., 227 HAMPTON GREEN, STATEN ISLAND, N.Y. 10312
(other tapes available)

BILLBARS (From Page 19)

```

320 PRINT@422, " SELECT KEY AND P
RESS ";:PRINT@462, "(1-7)";
330 PRINT@118, CHR$(CA);:PRINT@15
0, CHR$(CB);:PRINT@182, CHR$(CC);:
PRINT@214, CHR$(CD);:PRINT@246, CH
R$(CE);
340 GOSUB170
350 IFZ$="1" THEN GOSUB470:GOSUB5
20:GOTO1010
360 IFZ$="2" THEN GOSUB480:GOSUB5
20:GOTO1010
370 IFZ$="3" THEN GOSUB490:GOSUB5
20:GOTO1010
380 IFZ$="4" THEN GOSUB500:GOSUB5
20:GOTO1010
390 IFZ$="5" THEN GOSUB510:GOSUB5
20:GOTO1010
400 IFZ$="6" THEN1610
410 IFZ$="7" THEN1690
420 GOTO340
430 ' SCALES ADJUSTED HERE
440 SA=25:SB=50:SC=75:SD=100:SE=
125:RETURN
450 SA=100:SB=200:SC=300:SD=400:
SE=500:RETURN
460 ' DIVISORS (D) AND ACCOUNTS
ADJUSTED HERE AND AT 230-270
470 N=1:D=5:A$="LCRA/LSG":C=255:
GOSUB440:RETURN
480 N=2:D=5:A$="PHONE CO.":C=207
:GOSUB440:RETURN
490 N=3:D=20:A$="FOOD":C=191:GOS
UB450:RETURN
0 N=4:D=5:A$="GASOLINE":C=159:
GOSUB440:RETURN
510 N=5:D=5:A$="UTILITIES":C=239
:GOSUB440:RETURN
520 ' INPUT UPDATE
530 CLS:PRINT@99, " DO YOU WANT T
O UPDATE THIS ACCOUNT? (Y
/N)":PRINT
540 GOSUB170
550 IFZ$="Y" THEN750
560 IFZ$="N" THEN580
570 GOTO 540
580 CLS:PRINT@99, "DO YOU WISH TO
REVIEW THE ENTRIES? (Y/N
)":
590 GOSUB170
600 IFZ$="Y" THEN 640
610 IFZ$="N" THEN GOSUB190:GOTO29
0
620 GOTO 590
630 ' REVIEW ROUTINE
640 GOSUB 210
650 PRINT@88, " ";:PRINT@264, "
";:PRINT@296, " DO
YOU WISH ";:PRINT@328, " TO
REVIEW...? ";:PRINT@422, " SELE
CT KEY AND PRESS ";:PRINT@462, "(
1-5)";
660 GOSUB 170

```

```

670 IFZ$="1" THEN GOSUB470:GOTO10
10
680 IFZ$="2" THEN GOSUB480:GOTO10
10
690 IFZ$="3" THEN GOSUB490:GOTO10
10
700 IFZ$="4" THEN GOSUB500:GOTO10
10
710 IFZ$="5" THEN GOSUB510:GOTO10
10
720 GOTO660
730 ' UPDATE ROUTINE
740 SOUND 150,4:PRINT" INCORR
ECT RESPONSE...":PRINT:RETURN
750 PRINT" UPDATE: "A$:PRINT:
PRINT" ROUND OFF DOLLAR AMOUN
TS...":PRINT
760 INPUT" WHICH MONTH (1-12)
";M:PRINT:IF M>12 OR M=VAL("") T
HEN GOSUB 740 ELSE 780
770 GOTO 760
780 INPUT" WHAT AMOUNT : $";M
(T):PRINT
790 IF N=3 AND M(T)>500 THEN GOS
UB 880
800 IF N<>3 AND M(T)>125 THEN GO
SUB 880
810 A(N,M)=M(T)/D
820 PRINT" ANOTHER MONTH? (Y/
N) ";:PRINT

```

CHEAP BLANK COMPUTER TAPES

Specifically Designed for the Higher Baud
Rates of the Color and Mod III Computers

- Premium Tape • Short Rewind
- 100% Error Free • Superior Five Screw
- Fully Guaranteed Construction

| | 12 Pack | 24 Pack |
|------|---------|---------|
| C-10 | 75¢ ea. | 65¢ ea. |
| C-20 | 89¢ ea. | 79¢ ea. |

POSTAGE AND HANDLING \$1.50
OHIO RESIDENTS ADD 5.5% TAX

16K X-BASIC BUSINESS PROGRAMS

MINI BILLING PROGRAM 29.95

Invoice Printing — Plan Paper or Standard Form
Automatic Total & Quantity Extension
Work With Any Printer.
Data Tape — Saves Important Customer
Data for Later Use

FINANCE PACK — Common Business Programs 29.95

Amortize Loan, Balance of Loan After N Payments
Day of Week — Days Between Dates
Present Value of Future Amount
Future Value of Series Payments (IRA)

the little computer store
of cincinnati

7785 ELBROOK
CINCINNATI, OHIO 45237
(513) 631-4555

```

830 Z$=INKEY$:IFZ$="" THEN830
840 IFZ$="Y" THEN 760
850 IFZ$="N" THEN RETURN
860 GOTO 830
870 ' OVERLOAD ROUTINE
880 CLS:SOUND 150,4:PRINT@99,"AM
OUNT TOO LARGE...YOU'LL HA
VE TO ADJUST THE SCALES":PRINT@1
98,"(SEE LINES 440-450)":PRINT@
259,"PRESS 'ENTER' TO CONTINUE";
:INPUT E$:GOSUB190:GOTO290
890 ' SCREEN SUBROUTINES
900 CLS0:PRINT@7,A$;:PRINT@22,Y;
:RETURN
910 PRINTCHR$(128);STRING$(A(N,M
),C);:RETURN
920 X$=""
930 PRINT@32,M$;:GOSUB910:PRINT@
64,X$;:RETURN
940 PRINT@96,M$;:GOSUB910:PRINT@
128,X$;:RETURN
950 PRINT@160,M$;:GOSUB910:PRINT
@192,X$;:RETURN
960 PRINT@224,M$;:GOSUB910:PRINT
@256,X$;:RETURN
970 PRINT@288,M$;:GOSUB910:PRINT
@320,X$;:RETURN
980 PRINT@352,M$;:GOSUB910:RETUR
N
990 PRINT@387," 0":PRINT@391,SA:
PRINT@396,SB:PRINT@401,SC:PRINT@
406,SD:PRINT@411,SE;:PRINT@429,"
DOLLARS";:RETURN
1000 ' SCREEN 1
1010 GOSUB900
1020 M=1:M$="JAN":GOSUB930
1030 M=2:M$="FEB":GOSUB940
1040 M=3:M$="MAR":GOSUB950
1050 M=4:M$="APR":GOSUB960
1060 M=5:M$="MAY":GOSUB970
1070 M=6:M$="JUN":GOSUB980
1080 GOSUB990
1090 PRINT@484,"C=CONTINUE M=MEN
J P=PRINT";
1100 GOSUB170
1110 IFZ$="C" THEN1160
1120 IFZ$="P" THEN1290
1130 IFZ$="M" THENGOSUB190:GOTO29
0
1140 GOTO1100
1150 ' SCREEN 2
1160 GOSUB900
1170 M=7:M$="JUL":GOSUB930
1180 M=8:M$="AUG":GOSUB940
1190 M=9:M$="SEP":GOSUB950
1200 M=10:M$="OCT":GOSUB960
1210 M=11:M$="NOV":GOSUB970
1220 M=12:M$="DEC":GOSUB980
1230 GOSUB990
1240 PRINT@488," M=MENU P=PRINT
";
1250 GOSUB170
1260 IFZ$="P" THEN1290

```

```

1270 IFZ$="M" THENGOSUB190:GOTO29
0
1280 GOTO1250
1290 ' PRINTER ROUTINE
1300 CLS:PRINT@99,"IS THE PRINTE
R READY?";:PRINT@137,"(Y/N)";
1310 GOSUB170
1320 IFZ$="Y" THEN1350
1330 IFZ$="N" THEN140
1340 GOTO1310
1350 CLS:PRINT@99,"PRINTING..."
1360 PRINT#-2,CHR$(31):PRINT#-2,
TAB(7);A$;TAB(24);Y;
1370 PRINT#-2:PRINT#-2:PRINT#-2,
CHR$(30):PRINT#-2,TAB(8)"!";:PRI
NT#-2,CHR$(13);
1380 GOTO1390
1390 M=1:M$="JAN":GOSUB1580:GOSU
B1590
1400 M=2:M$="FEB":GOSUB1580:GOSU
B1590
1410 M=3:M$="MAR":GOSUB1580:GOSU
B1590
1420 M=4:M$="APR":GOSUB1580:GOSU
B1590
1430 M=5:M$="MAY":GOSUB1580:GOSU
B1590
1440 M=6:M$="JUN":GOSUB1580:GOSU
B1590
1450 M=7:M$="JUL":GOSUB1580:GOSU
B1590
1460 M=8:M$="AUG":GOSUB1580:GOSU
B1590
1470 M=9:M$="SEP":GOSUB1580:GOSU

```

(Continued on next page)

COMPUTER CASSETTES AND AUDIO CASSETTES



| LENGTH | 12 PAK | 24 PAK |
|--------|--------|--------|
| C-05 | 69¢ | 59¢ |
| C-10 | 79¢ | 69¢ |
| C-20 | 99¢ | 89¢ |

| LENGTH | 12 PAK | 24 PAK |
|--------|--------|--------|
| C-30 | \$1.19 | \$1.09 |
| C-60 | \$1.49 | \$1.39 |
| C-90 | \$1.79 | \$1.69 |

- 100% ERROR FREE • FULLY GUARANTEED • SUPERIOR 5-SCREW CONSTRUCTION •
- HIGH FREQUENCY RESPONSE • VERY LOW NOISE • WIDE DYNAMIC RANGE •
- USED BY SOFTWARE FIRMS, HOBBYISTS AND PUBLIC SCHOOLS NATIONWIDE •
- BOXES SOLD ONLY WITH CASSETTES 20¢ EA • \$2.75 PER PAK SHIPPING •

FOR ORDERS ONLY
CALL TOLL-FREE

1-800-426-4747
EXT. 480



MICRO-80™ INC.



RT. 2665 BUSBY RD.

OAK HARBOR, WA 98277

BILLBARS (From Page 21)

```

B1590
1480 M=10:M$="OCT":GOSUB1580:GOS
UB1590
1490 M=11:M$="NOV":GOSUB1580:GOS
UB1590
1500 M=12:M$="DEC":GOSUB1580:GOS
UB1590
1510 PRINT#-2,CHR$(26);:PRINT#-2
,TAB(9)"!";:PRINT#-2,CHR$(13);
1520 PRINT#-2,TAB(8)"!";:PRINT#-2
,STRING$(58,"-");
1530 PRINT#-2,CHR$(26);:PRINT#-2
,CHR$(13);
1540 PRINT#-2,TAB(11)"0";TAB(19)
SA;TAB(29)SB;TAB(39)SC;TAB(49)SD
;TAB(59)SE
1550 PRINT#-2,CHR$(13);:PRINT#-2
,TAB(34)"DOLLARS":SOUND100,5
1560 GOSUB190:GOTO290
1570 ' PRINTER SUBROUTINES
1580 A(N,M)=A(N,M)*2:PRINT#-2,TA
B(4)M$;TAB(8)"!";TAB(10)" ";:PRI
NT#-2,STRING$(A(N,M),"*"):RETURN
1590 PRINT#-2,CHR$(26);:PRINT#-2
,TAB(9)"!";:PRINT#-2,CHR$(13);:R
ETURN
1600 ' LOAD TAPE ROUTINE
1610 CLS:MOTORON:PRINT@99,"INPUT
DATA FROM TAPE...";:PRINT@165,"
POSITION TAPE...";:PRINT@197,"PR
ESS 'PLAY'";:PRINT@229,"PRESS 'E
NTER'";:SOUND 100,5:INPUT E$
1620 OPEN "I",#-1,"BILLBARS"
1630 IF EOF(-1)THEN1660
1640 INPUT#-1,Y:FORN=1TO5:FORM=1
TO12:INPUT#-1,A(N,M):NEXTM,N
1650 GOTO1630
1660 CLOSE #-1:SOUND100,5
1670 GOSUB190:GOTO290
1680 ' SAVE TO TAPE ROUTINE
1690 CLS:MOTORON:PRINT@99,"SAVE
DATA TO TAPE...";:PRINT@165,"POS
ITION TAPE...";:PRINT@197,"PRESS
'PLAY' AND 'RECORD'";:PRINT@229
,"PRESS 'ENTER'";:SOUND 100,5:IN
PUT E$
1700 OPEN "O",#-1,"BILLBARS":PRI
NT#-1,Y:FORN=1TO5:FORM=1TO12:PRI
NT#-1,A(N,M):NEXTM,N:CLOSE#-1:S
OUND100,5
1710 CLS:PRINT@98,"TAPE SAVE COM
PLETE...";:PRINT@162,"DO YOU WAN
T TO BACK UP A TAPE? (Y/N
)";
1720 GOSUB 170
1730 IFZ$="Y"THEN1680
1740 IFZ$="N"THEN GOSUB190:GOTO2
90
1750 GOTO1720

```

SUBSCRIPTION RATES TO BE INCREASED

Effective May 1, subscription rates to the *RAINBOW* will be increased by \$4 per year to \$16 for an annual subscription of 12 issues. The single copy price was increased to \$2.50 on March 1.

Present subscribers to the *RAINBOW* may renew their subscriptions at the old rate of \$12 per year through May 15. After May 15, all renewal subscriptions will also be \$16 per year. We are offering this special renewal rate only for those who currently hold subscriptions to the *RAINBOW* and renew before May 15 or to those who subscribe for the first time for a period of more than one year before May 1.

Since its appearance in July, 1981, the *RAINBOW* has grown from four pages of editorial copy to 44. While advertising has played a major role in holding down the subscription price, continued printing and postage price increases necessitate this small increase in price. We hope you will understand the reason for it.

Canadian and Mexican subscriptions will be increased \$4 also. Canadian and Mexican subscribers will also be able to take advantage of the special renewal rate. However, subscribers in those two countries will be an additional \$2 per year postage and handling -- making the differential \$6 for Canadian and Mexican subscriptions. The new subscription rate to Canada and Mexico will be U.S. \$22 per year. Renewals from Canadian and Mexican subscribers will be accepted at U.S. \$18 until May 15.

We are especially sorry to have to make what is a significant increase for Canadian and Mexican subscribers. The reason for this increase is simply because of postal rules by Canada and Mexico -- which do not allow third class mailings from the United States and require the *RAINBOW* to be mailed in envelopes. This represents a major out-of-pocket cost for us and we are merely passing it along. Last month's issue of the *RAINBOW* cost 71 cents to mail to Canada and Mexico, not counting the cost of envelopes and handling.

Non-U.S. subscribers other than those in Canada and Mexico will experience a \$5 increase.

Renewals at the old rate may be made for one year only.

THE ULTIMATE IN COLOR COMPUTING

WORD PROCESSING THE SUPER "COLOR" WRITER II

The Word Processor that re-wrote the book on Word Processing

The **Super "Color" Writer** is a FAST, machine code, full featured, character (screen) oriented word processing system for the TRS-80(TM) Color Computer and ANY printer. The video display is styled after a professional phosphor (green characters on black background) display for hours of use without eye fatigue (optional orange on black). The unique print WINDOW frees you from 32, 51 or 64 character lines FOREVER! This window can be moved anywhere in the text file, up, down, left or right to display the text as it will be printed without wasting paper. You can create or edit **Super "Color" Terminal** files, ASCII files, BASIC programs or Editor/Assembler source listings. It's simple enough for beginners with 4K and for the professional writer with a 32K disk system and a lot to say, there's plenty of room to say it!

| COMPARISON CHART | SUPER COLOR WRITER | THE COMPETITION |
|---------------------|--------------------|-----------------|
| System Size | 4K 16K 32K | 4K 16K 32K |
| TAPE Text space | N/A 8K 24K | N/A 2K 38K |
| ROMPAK Text space | 25K 15K 31K | N/A N/A N/A |
| DISK Text space | N/A 6.5K 22.5K | N/A 0.5K 16.5K |
| Right Justify | YES | NO |
| Video Window | YES | NO |
| Edit any ASCII File | YES | NO |

The figures speak for themselves and with professional features like PROGRAMMABLE function string commands to perform up to 28 commands automatically, PROGRAMMABLE text file chaining, PROGRAMMABLE column insert & delete, and right hand JUSTIFICATION with punctuation precedence, the choice is clear but there's still more!

The **Super "Color" Writer** takes full advantage of the new breed of "smart printers" with Control codes 1-31, 20 Programmable control codes 0-255 for special needs and built in Epson MX-80, Centronics 737, 739 and R.S. Line Printer IV, VII, VIII drivers.

CHECK THESE FEATURES!!

HIGH SPEED & normal operations • 32K Compatible • Window • Key beep • HELP table • 128 character ASCII & graphics • Memory left • Lower case • Full cursor control • Quick paging • Scrolling • Word wrap around • Tabs • Repeat all functions • Repeat last command • Insert character & line • Delete character, delete to end of line, line to cursor, line & block • Block move, copy & delete • Global Search, Exchange & Delete • Merge or Append files • Imbed Control Codes in text • Underline • Superscripts • Subscripts • Headers, Footers & 2 Auxiliary footnotes on odd, even or all pages definable position • Flush right • Non-breakable space • 4 centering modes: 5, 8.3, 10 & 16.7 (CPI) • Full page & print formatting in text • Single sheet pause • Set Page length • Line length, Line spacing, Margins, page numbers • Title pages • Printer baud: 110, 300, 600, 1200, 2400 • Linefeeds after CR • Soft & hard formfeed • Works with 8 bit printer fix & more!

SUPER "COLOR" WRITER DISK

The Disk version of the **Super "Color" Writer** works with the TRS-80C Disk System and has all the features listed above plus many more! Use with up to four Disk Drives. Includes an extended HELP table you can access at any time. Call a directory, print FREE space, Kill disk files and SAVE and LOAD text files you've created all from the **Super "Color" Writer**. Print, merge or append any **Super "Color" Terminal** file, ASCII file, BASIC program or Editor/Assembler source listing stored on the Disk or tape. The **Super "Color" Writer** Disk version has additional formatting and print features for more control over your printer and PROGRAMMABLE chaining of disk files for hands off operation. Print an entire BOOK without ever touching a thing!

Includes comprehensive operators manual.

TAPE \$49.95 ROM PAK \$74.95 DISK \$99.95
Manual only, \$7.00 Refundable with purchase.

Allow 2 extra weeks for personal checks. C.O.D. orders add \$2.00. When ordering specify computer type and add \$2.00 for S.H. Mini. residents add 5% sales tax. VISA/Master Chg.

DEALER INQUIRES ARE INVITED.

TRS-80 is a registered trademark of the Tandy Corp.

COMMUNICATIONS

THE SUPER "COLOR" TERMINAL

Time Share, Smart Terminal, High-speed Data Xfer & Videotex

The **Super "Color" Terminal** turns the Color Computer into a Super-smart terminal with all the features of VIDEOTEX(TM) plus much more. COMMUNICATE with Dow Jones & Compuserve and with computers like the TRS-80(TM) MODEL I, II, III, APPLE etc. via modem or RS-232 direct! Save the data to tape or print it! Reduces ON—LINE cost to a minimum!

FEATURES

10 buffer size settings from 2-30K • Buffer full indicator • Lprints buffer contents • Full 128 ASCII keyboard • Compatible with **Super "Color" Writer** files • UPLOAD & DOWNLOAD ASCII files, Machine Language & Basic programs • Set RS-232 parameters • Duplex, Half Full • Baud Rate: 110, 300, 600, 1200, 2400, 4800 • Word Lengths 5, 6, 7 or 8 • Parity: Odd, Even or None • Stop Bits: 1-9 • Local linefeeds to screen • Tape save & load for ASCII files, Machine code & Basic programs • Unique clone feature for copying any tape.

Super "Color" Terminal Disk

The Disk version offers all the features listed above plus Host ability in full duplex • Lower case masking • 10 Keystroke Multiplier (MACRO) buffers on disk to perform repetitive log-on tasks and send short messages (up to 255 bytes) • Programmable prompts for send next line • Selectable character trapping • Set printer line length • Pagination • Linefeed with CR option • Printer Baud: 110, 300, 600, 1200 & 2400 • Documentation

TAPE \$39.95 ROM PAK \$49.95 DISK \$69.95
Documentation only, \$4.00 Refundable with purchase.

16K RAM KIT \$15.99

PREMIUM 16K 200 Ns Ram for TRS-80 Color Computer. Includes ram test instructions and a ONE YEAR GUARANTEE. 32K upgrade instructions FREE! (32K requires soldering)

ROMPAK KITS

Put your programs in a ROMPAK or execute tape based programs in a RAMPAK at \$COOO. Kit includes 1 socketed P.C. board that holds up to 4, 2716 EPROMs or 4, 2K Static Ram Chips for a total of 8K and a plastic housing to fit the rom port. \$24.95
2716 2K 5v EPROM \$5.95 ea. 2K Static RAM \$19.95 ea.

COLOR GAMES!!

FEATURING GREAT GRAPHICS & SOUND!

ADVENTURE 3-PAK Requires 16K Extended Basic TAPE \$24.95

This TRILOGY OF 3-D FANTASY GAMES takes you to the WORLD UNDER THE CIMEEON MOON. Engage in ritual combat with Toomooth Narthoc Monsters and skilled warriors. Advance in rank with play experience. Then adventure through DAZMAR'S UNDERWORLD OF DOOM to the forbidden ruins of Castle Argan. Search for the Eye of Dazmar while avoiding the sorcerer's intricate traps. Survivors must then negotiate the perilous peaks of the Ugrek Mountains to the FORSAKEN GULTCH where the wicked idol awaits restoration.

VEGAS 5-PAK Requires 16K Extended Basic TAPE \$19.95

The THRILLS OF A VEGAS CASINO at home. Five action packed Vegas games for up to four players: CASINO CRAPS* 21* ONE ARMED BANDIT* UP & DOWN THE RIVER* KENO. Bank tracks players' winnings from game to game • realistic cards • regulation tables • boards • authentic sounds • lively graphics • official rules in each game.

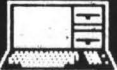
COMBAT 3-PAK Requires 16K Extended Basic TAPE \$24.95

Three action packed two player games featuring lifelike graphics and sound of LASER FIRE, CANNONS and PHOTON TORPEDOES.

2-1-0 TANK COMBAT five terrains • the experienced arcade player can design combat scenario. STELLAR BATTLE pilot a Flex-Wing Fighter at incredible speeds in enemy space taking out Dorian Tye Fighters defending the Imperial Star Fortress. GALACTIC BLOCKADE maneuver your craft in a course that boxes your opponent but avoid cosmic debris and hostile space probes!



NELSON
SOFTWARE
SYSTEMS



P.O. Box 19096 Minneapolis, MN 55419 612/827-4703

NEW!
QUICK REFERENCE

TRS-80* BASIC

MODEL I

LEVEL II SYSTEM REFERENCE CARD

© 1981, SHIRLEY A. & PAUL P. NANO
*1981-82 is a Registered Trademark of Tandy Corp.

MODEL II

LEVEL II SYSTEM REFERENCE CARD

© 1981, SHIRLEY A. & PAUL P. NANO
*1981-82 is a Registered Trademark of Tandy Corp.

MODEL III

LEVEL II SYSTEM REFERENCE CARD

© 1981, SHIRLEY A. & PAUL P. NANO
*1981-82 is a Registered Trademark of Tandy Corp.

NEW!
THROW AWAY THE BOOK

TRS-80* BASIC AND ASSEMBLER

MODEL I

SYSTEM REFERENCE CARD

© 1981, PHILIP P. FARRINGTON, SHIRLEY A. & PAUL P. NANO
*1981-82 is a Trademark of Tandy Corp.

MODEL II

SYSTEM REFERENCE CARD

© 1981, PHILIP P. FARRINGTON, SHIRLEY A. & PAUL P. NANO
*1981-82 is a Trademark of Tandy Corp.

MODEL III

SYSTEM REFERENCE CARD

© 1981, PHILIP P. FARRINGTON, SHIRLEY A. & PAUL P. NANO
*1981-82 is a Trademark of Tandy Corp.

MODEL I

BASIC: Buff & Blue

5 Panels, 10 Pages
(For the Classroom)
Memory Map.
Easy Graphics.
Basic Statements.
Basic Functions.
Basic Facts.
Special Characters.
Basic Commands.
Edit Subcommands.
PRINT USING Examples.
Message & Codes.
Reserved Words.
Special Keys.
Ascii Character Chart,
with Space Compression Codes.
Control Codes.
Basic Internal Codes.
Hex/Dec Conversion Chart.
Screen Line Layout.
BASIC & ASSEMBLER: Buff
8 Panels, 16 Pages
(For the Pro)
Complete 280 Instructions.
Assembler Instructions.
Commands, Operators,
Editor/Assembler Commands,
and Edit Subcommands.
Flags, Conditions, & Chart.
Internal Routines.
Assembler Error Msgs.
Plus all items in the Basic Card,
except Internal Codes.

MODEL II

BASIC & ASSEMBLER: Green

10 Panels, 20 Pages
(For the Business)
Small Memory Map.
Screen Layout.
Easy Graphics.
Complete 280 Instructions.
Series I Assembler Instr.
Commands, Operators, and Edit Subcommands.
Assembler Error Msgs.
Power-up Error Msgs.
Flags, Conditions, & Chart.
Wild Cards, DOS Messages.
SVC Procedure Panel.
Host Logon Panel.
Version 2.0 Lib Command Formats and
System Utility Formats.
Basic Functions & Statements.
DOS File Naming Convention.
Basic Commands & Edit Subcommands.
Special Keys.
Basic Internal Codes and Reserved Words.
Basic Mags & Codes.
PRINT USING Examples.
Special Characters.
DO* Utilities & BASIC Command.
Ascii Character Chart with SVC Names and
Numbers.
Control Codes.

MODEL III

BASIC: Blue & Buff

8 Panels, 12 Pages
(For the Classroom)
Special Characters.
Kana Characters.
Euro-Characters.
Memory Map.
Special Keyboard Functions.
Ascii Char Chart w/Space Compression Codes.
Control Codes.
Cassette Loading Err Msgs.
Basic Commands, Edit Subcommands, Special
Chars, Basic Statements, Facts, Functions,
Derived Functions, Special Operations (POKES).
PRINT USING Examples.
Basic Mags & Codes.
Basic Internal Codes.
Reserved Words.
Screen Line Layout.
BASIC & ASSEMBLER: Blue
10 Panels, 20 Pages
(For the Pro)
Complete 280 Instructions.
Assembler Instructions, Commands, Operators.
Series I Editor/Assembler Commands & Edit
Subcommands.
Flags, Conditions, & Chart.
Hex/Dec Conversion Chart.
Assembler Error Msgs.
Internal CALL Routines.
Break Processing Procedure.
Plus all items in the Basic card.

COLOR

BASIC & EXTENDED: Grey + 9 Colors.

8 Panels, 16 Pages
(For the Artist)
All Color Graphics.
System Commands.
PRINT USING Examples.
Special Characters.
Special Keys.
Cassette Loading Err Msgs.
Basic Functions & Statements.
Playing Music, Making a Circle,
and Drawing Panels.
Derived Functions.
Messages & Codes.
Musical Notes, by Octave, in Color,
including Rests and Time.
Memory Map.
Reserved Words.
Internal Codes.
A Page of Tips.
Ascii Char Codes Chart,
Including Inverse Graphics and Color Graphics.
Control Codes.
Color Group Chart.
Prmode Information Summary.
Screen Line Layout.
Extended Graphics Prmode
Illustrations.

Each card is a complete summary of the reference manuals and the microcomputer. Cards are two or more colors, printed on 80 pound Beckett Antique cover stock or a comparable stock, stretch-wrapped in plastic for shipping. They are accordion-foldup cards, in the same style as the traditional IBM reference cards used on the major computers for years. Fold-up size is eight and one-half by three and three-quarter inches, so they will fit easily into the shirt pocket. These cards provide a complete summary of the manuals plus many extras at your fingertips.

RETAIL ORDER FORM

Please send me: ☐ Pocket Basic2.95

- () Copies of MODEL I BASIC & ASSEMBLER @ \$4.95
() Copies of MODEL I BASIC-ONLY @ \$2.95
() Copies of MODEL II BASIC & ASSEMBLER @ \$5.95
() Copies of MODEL II BASIC-ONLY @ \$3.95
() Copies of MODEL III BASIC & ASSEMBLER @ \$5.95
() Copies of MODEL III BASIC-ONLY @ \$3.95
() Copies of COLOR BASIC AND EXTENDED @ \$4.95

NAME: _____

ADDRESS: _____

CITY: _____

STATE: _____

ZIP: _____

Indiana Residents Add 4 Percent for Indiana Sales Tax

Send Check or Money Order to:

NANOS SYSTEMS CORP.
P.O. BOX 24344
SPEEDWAY, IN 46224
(317) 244-4078

Wholesale prices available when you purchase over 24 cards of the same kind.

Super wholesale prices for over 99 cards of the same kind.

Educational Institutions special prices for under 25 cards.

Software Review...

QUEST WILL KEEP YOU UP LATE QUESTING

QUEST is advertised as a "new idea in adventure games" and it is. It is also entertaining, a lot of fun and exercises the mind.

Too, **QUEST** (Aardvark-80, 2352 S. Commerce, Walled Lake, MI, 48088, \$14.95) is a lot of fun to play. But, it is more than a simple hack-and-slash adventure and it makes for quite a bit of enjoyment.

I couldn't get away from **QUEST**. There were a couple of times when I tried to leave and go to bed, but it seemed like I was in a good position to attack Moorlock's Castle...until something happened.

This game uses the low-res screen to draw a map of a land of castles, towers, ruins and the like. Each type of thing is shown by a symbol -- and your position is shown by a symbol, too. You move around using the arrow keys and, when you get near something it shows up on the screen. A message line at the bottom alerts you to what it is.

The screen starts out almost blank, with just you, Moorlock's Castle, a river and a couple of cities shown. You have to discover the location of the other places -- and discover how to get into them yourself.

You are not the only person in this land. There are bands of wizards, pilgrims, soldiers and the like. Sometimes some of the other bands have hired soldiers for protection. You can run away from these groups, try to fight or make friends. Sometimes your overtures are accepted, other times not. Like life, no?

By the way, your band can buy weapons and implements in the cities. This frequently gets you into a bargaining situation with a shopkeeper. But, you need gold to buy...and if you are long on gold and short on men, they won't be able to carry it all. And, you need food for the men. Or they'll die of starvation. The more men you have the more you can carry. But the more food you need.

This is an easy-to-play game that is a lot of fun. The combinations are endless and, frankly, I never missed not having the high-res screen. Its really not necessary.

You will really enjoy **QUEST**!

Oh...did I mention Moorlock's Castle is on the other side of the river from you and that there isn't a bridge???

Software Review...

CAVE HUNTER IS PACMAN WITH A TWIST

At first **CAVE HUNTER's** game layout looks familiar, like that of **PACMAN**. But ol' P-M has it easy compared to what you have to go through to rack up the points in **CAVE HUNTER**.

This program, (from Mark Data, 23802 Barquilla, Mission Viejo, CA, 92691, \$24.95) is in machine language and does have those little dots, a PAC-like figure and some small villains who try to do you in.

BUT...there is more. You see, to be a **CAVE HUNTER**, you have to actually hunt through a cave and find something in it. And that's the rub, because it seems the little villains know where the loot is. Or, at least, they know how to keep you from getting either (1) it or (2) back to the surface.

The purpose of the game is to venture down into the cave, get the treasure and return to the surface. You steer your **CAVE HUNTER** with your joystick and try to avoid the bad guys.

As someone said: "Easy it isn't." But, as someone *must* have said: "Fun, it is."

Response to the joysticks is good and the action is fast-paced. There is a lot of planning involved, and you do get some "free time" -- you can stay on the surface while you plot your next move. Of course, if you stay there too long, the bad guys figure out where you are and its difficult to get back into the cave.

In a word, **CAVE HUNTER** is enjoyable.

Software Review...

EL CASINO IS FOR ALL VEGAS ADDICTS

Before author Arnold Pouch accuses me of not knowing what the original El Casino is, I want to assure him -- and you -- that I have visited that pleasure dome in Freeport, the Bahamas. It is reputed to be the largest casino in the world.

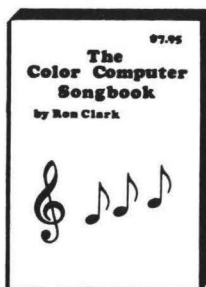
In some ways, **EL CASINO** (from Superior Graphic Software, 406 Little Mountain Road, Waynesville, NC, 28786, for \$49.95) is the largest casino of its type in the world, too. It is three programs on tape or disk that cover three of the most popular game of chance in any casino.

All, too, are done with Pouch's Motion Picture Programming (MMP). This offers some of the most imaginative graphics we have seen for the CoCo.

(Continued on Page 28)

Color Computer

40 of the world's best-known songs, scored for easy playing on the TRS-80 Color Computer, including favorite popular, classical, folk and seasonal music selections.



The Color Computer Songbook

Color Computer

The must-have handbook, loaded with tips, tricks, secrets, shortcuts, hints and scores of complete ready-to-run graphics programs.



Color Computer Graphics

Color Computer

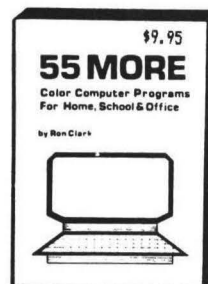
The must-have software Ideabook, overflowing with hints, secrets, shortcuts, and color techniques ...with 101 ready-to-run programs.



101 Color Computer Programming Tips & Tricks

Color Computer

An all-new and different collection of tested, ready-to-run software for businessmen, teachers, students and hobbyists.



55 MORE Color Computer Programs for the Home, School & Office

Order direct from this ad. Send check or money order. Include \$1 shipping for each item ordered up to a maximum of \$3. Or write for our free catalog. Mail orders to:

CONNECTION-80
OF WOODHAVEN
BOB ROSEN
93-15 86 DRIVE
WOODHAVEN, NY 11421

Word Processing Lowerkit

It converts your screen from an illegible checkerboard to this:

This photograph was taken of an ordinary television screen being fed by a Color Computer unmodified except for the installation of the lowerkit. Characters:

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz_ ^
01234567890!"#\$%&'()*:;<,>./?

- Complete and ready to install—no software needed
- Nothing to solder—fully assembled, tested, guaranteed
- Compatible with all Color Computer software
- Absolutely no loss of hi-resolution graphics modes
- Optional cut-off switch restores original reverse-caps display
- European, Kata Kana (Japanese) and Greek characters optional

\$79.95 complete

CONNECTION-80
OF WOODHAVEN
BOB ROSEN
93-15 86 DRIVE
WOODHAVEN, NY 11421

CHECK OUT OUR COLOR BBS AT (212) 441-3755.....24 HOURS EVERY DAY

colorcom/e

The ULTIMATE Color Computer Smart Terminal Program

LOOK AT THESE FEATURES:

1. FULL ONLINE AND OFFLINE SCROLLING, 1 OR 12 LINES AT A TIME.
2. SELECTABLE BAUD RATE (300, 600, 1200) AND PARITY. FULL OR HALF DUPLEX, TOO!
3. OUTPUTS ALL OR ANY PART OF RECEIVED TEXT TO PRINTER
4. ONLY TERMINAL PROGRAM ON THE MARKET THAT AUTOMATICALLY OPENS AND CLOSES THE BUFFER WHEN DOWNLOADED. COLORCOM/E WILL THEN SEARCH THROUGH THE BUFFER FOR THE CORRECT FILE AND WRITE IT TO CASSETTE FILE. ALLOWS YOU TO READ MULTIPLE FILES AND WRITE THEM AS CASSETTE FILES, SELECTIVELY!!
5. FOR THE 32K COCO, GIVES YOU A BUFFER OF 30,300 BYTES FOR FOR STORING FILES FOR DOWNLOADING. MORE THAN ANY OTHER TERMINAL PROGRAM!

TO ORDER YOUR ROM-PAK, SEND CHECK OR M.O. FOR \$49.95 TO CONNECTION-80, BOB ROSEN, 93-15 86 DRIVE, WOODHAVEN, NY 11421.

N O W --- Radio Shack Disc Interface\$149.95

CONNECTION-80
OF WOODHAVEN
BOB ROSEN
93-15 86 DRIVE
WOODHAVEN, NY 11421

CHECK OUT OUR COLOR BBS AT (212) 441-3755.....24 HOURS EVERY DAY

CASINO (From Page 25)

Of particular interest is the Craps game, which gives you a wide variety of bets to make and keeps track of all of them on the graphics screen. No shifting screens to keep up with the four players who can stand at the EL CASINO table at one time!

But the real turn-on is when its time for the "bones" to roll! A hand at one end of the table shakes back and forth and then opens up as the dice come rolling toward you. Not a flicker in the graphics, folks. Of course, the game keeps track of all your bets -- and almost all of the traditional ones are available. Even the "hard ways."

Blackjack, also played in EL CASINO, uses graphically displayed cards, somewhat similar to a number of the arcade games. It does a good job and its also nice to know you won't get thrown out of this casino for card-counting. The program will count cards for you!

Lastly are Slot Machines, which operate fairly much the way all slots do. Motion Picture Programming does give this interesting graphics.

All three programs are also available individually.

Software Review...

SPACE INVADERS BY COMPUTERWARE

Space Invaders is a game, frankly, which captures the imagination of thousands. The other day I was in a large airport and, with some time between connections, I stopped in at the arcade to see what was new.

As usual, there were a few things new, but there were a number of the old standbys around, too. Space Invaders was one of the old friends. And, as usual, there were people waiting to play.

If Space Invaders is the Monopoly of the electronic generation (gee, now there's some philosophy. And I bet you thought you were reading a review!), then everyone will have one version or another eventually. And you could do far worse than to buy COLOR INVADERS from Computerware (Dept. C, Box 668, Encinitas, CA, 92024, \$24.95 on tape, \$29.95 on disk).

Is there anyone out there who doesn't know how to play Space Invaders? I thought not, so we'll do without the explanation of the game itself.

However, the Computerware COLOR INVADERS game is in machine language, which means you have excellent control of the joystick in

(Continued on Page 31)

CO-RESIDENT EDITOR/ASSEMBLER (CORES9)

CORES9 is a complete full function editor/assembler package that will allow you to create, edit and assemble 6809 machine language programs for the color computer. It features a powerful full function text editor and supports the entire 6809 instruction set with all addressing modes, forward and reverse label references, will output object code directly to memory or "CLOADM" compatible tapes and much more.

Price \$39.95.



TEXT EDITOR

This program is a line/character oriented text editor for the color computer, that will enable you to create and edit text files for Basic programs, letters, text data files, or almost anything you might want to put on paper. It features functions for adding, inserting, deleting, moving and copying text lines or paragraphs; powerful string search and replace commands, single and automatic line numbers and line editing with 9 sub commands to insert, delete, change, add and remove individual or multiple characters. Tape commands allow you to save, load, append, and skip tape files; also it is compatible with Basic ASCII tape formats. A MUST HAVE PROGRAM!!

ONLY \$19.95

SYSTEM MONITOR (TRSMON)

Trsmon is a 2K system monitor program that will allow you to explore the workings of the color computer. It features 9 debugging commands, tape load and save compatible with Basic "CLOADM", up/down load via RS232 port, terminal package that allows the color computer to be used as a terminal at baud rates up to 9600 baud and a printer driver to direct display output to the printer for memory dumps, disassemblies etc. The program is position independent so it can be moved anywhere within the system memory. A very powerful tool at a very reasonable price.

ONLY \$19.95

5566 RICOCHET AVE.
Las Vegas, Nv. 89110

CER-COMP
(702) 452-0632

All Orders Shipped From Stock
Add \$1.00 Postage -
MC/VISA Add 3%

EXCITING NEWS FOR COLOR COMPUTER USERS

FLEX, OS-9 and the Radio Shack Disk System ALL on the SAME Color Computer

Would you believe that you can run FLEX, OS-9 and Radio Shack disk software on the same Color Computer, and all you have to do is change the disk? That's right, just change the disk. If you have a 32K Color Computer with the Radio Shack disk system, all you need to do is make a trivial modification to access the hidden 32K, as described in the Feb. issue of COLOR COMPUTER NEWS and the March issue of '68' Micro. You can get FLEX from us right now. OS-9 will be ready by summer. Please note that this will only work with the Radio Shack disk system and 32K/64K memory chips that RS calls 32K. Maybe they put 64K's in yours, too. If you don't have a copy of the article, send a SASE and we'll send it to you.

Using this system to run FLEX and OS-9 has many advantages. First, it gives you 48K from zero right up to FLEX. This means that **ALL FLEX compatible software will run with NO MODIFICATIONS and NO PATCHES!** There are no memory conflicts because we moved the screen up above FLEX which leaves the lower 48K free for user programs.

What you end up with is 48K for user programs, 8K for FLEX and another 8K above FLEX for the screens and stuff. We are working on a multi screen format so you can page backward to see what scrolled by and a Hi-Res screen that will enable us to have 24 lines by 42 character display. That's better than an Apple!

We also implemented a full function keyboard, with a control key and escape key. All ASCII codes can now be generated from the Color Computer keyboard!

We also added some bells and whistles to Radio Shack's Disk system when you're running FLEX or OS-9. We are supporting single or double sided, single or double density, 35, 40 and 80 track drives. If you use double sided drives, the maximum is three drives because we use the drive 3 select for side select. When you are running the Radio Shack disk, it will work with the double sided drives but it will only use one side and only 35 tracks. Using 80 track drives is okay, but will not be compatible with standard Radio Shack software. You can also set each drive's stepping rate and drive type. (SS or DS SD or DD)

In case you don't understand how this works, I'll give you a brief explanation. The Color Computer was designed so that the roms in the system could be turned off under software control. In a normal Color Computer this would only make it go away. However, if you put a program in memory to do something first (like boot in FLEX or OS-9), when you turn off the roms, you will have a full 64K RAM System with which to run your program (FLEX or OS-9). When the roms are turned off, it is as if you had removed them from the computer. They are gone!

Now, we need the other half of the 64K ram chips to work, and this seems to be the case most of the time, as the article states. Of course, you could also put 64K chips in.

We decided that this was the best way to run FLEX and OS-9 on the Color Computer because it does remove the roms from the memory map and leaves the full 48K for user programs. If you just put in memory for FLEX and use the Basic hooks for I/O, all you have is a little over 30K for user programs. In addition, very few FLEX programs will run without being modified and some won't run very well, if at all (our DATAMAN + for example). Let me state it again. **ALL FLEX COMPATIBLE PROGRAMS WILL RUN WITHOUT MODIFICATION!!!** and the same goes for OS-9!

It is also the **ONLY** way OS-9 will run because 30K is just not enough.

Some neat utilities are included.

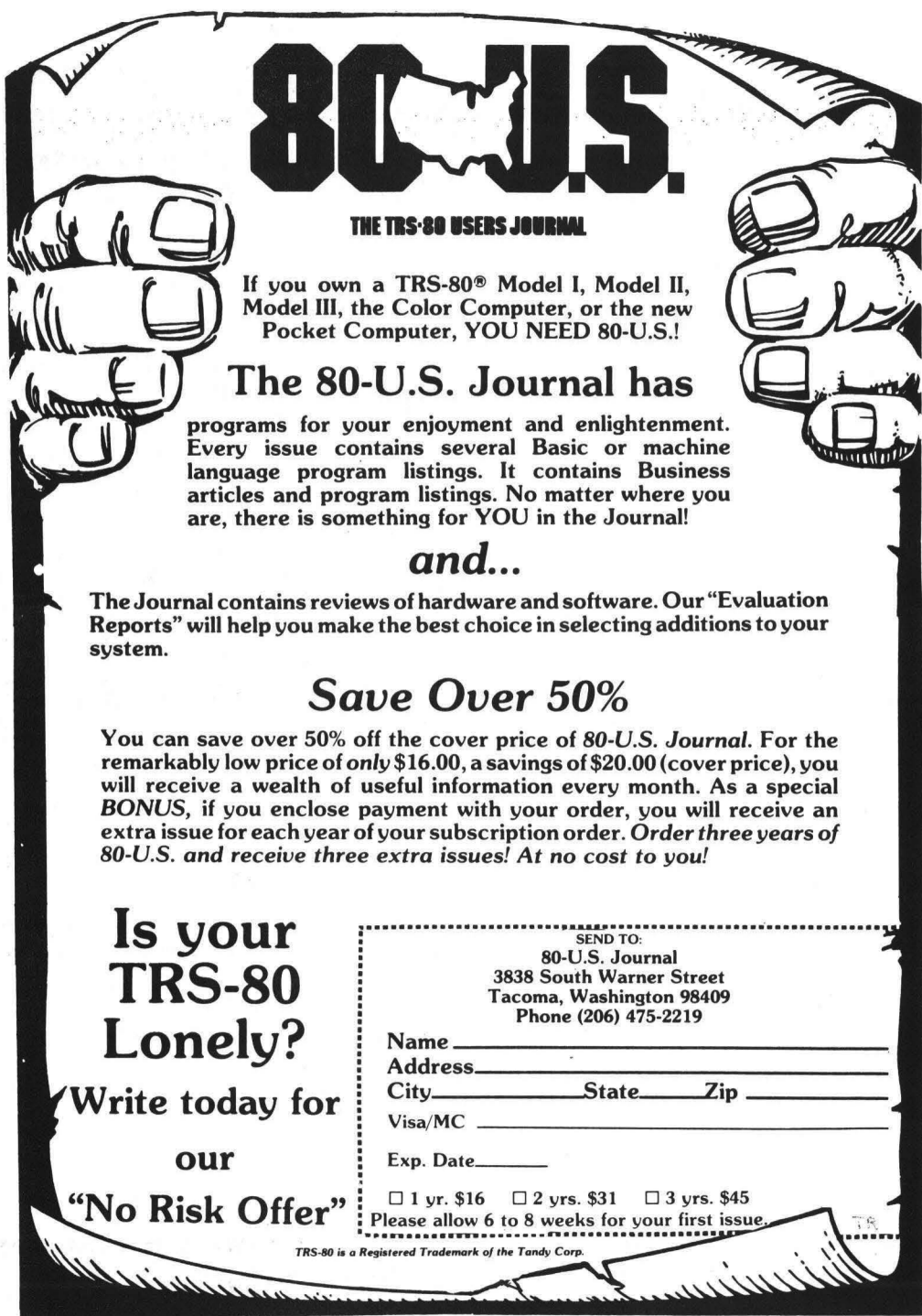
MOVEROM moves Color Basic from ROM to RAM. Because it's moved to RAM you can not only access it from FLEX, you can run it and even change it!! You can load Color Computer cassette software and save it to FLEX disk. Single Drive Copy, Format and Setup commands are also included.

If you don't have a Color Computer, we can sell you one complete with 64K ram, 24K rom, Single RS disk drive and FLEX for only \$1,490, set up and ready to go.

FLEX with Edit, Asmb and installation disk is \$199.

FRANK HOGG LABORATORY, INC.

130 MIDTOWN PLAZA • SYRACUSE NEW YORK 13210 • (315)474-7856



80-U.S.

THE TRS-80 USERS JOURNAL

If you own a TRS-80® Model I, Model II, Model III, the Color Computer, or the new Pocket Computer, YOU NEED 80-U.S.!

The 80-U.S. Journal has

programs for your enjoyment and enlightenment. Every issue contains several Basic or machine language program listings. It contains Business articles and program listings. No matter where you are, there is something for YOU in the Journal!

and...

The Journal contains reviews of hardware and software. Our "Evaluation Reports" will help you make the best choice in selecting additions to your system.

Save Over 50%

You can save over 50% off the cover price of *80-U.S. Journal*. For the remarkably low price of *only \$16.00*, a savings of \$20.00 (cover price), you will receive a wealth of useful information every month. As a special **BONUS**, if you enclose payment with your order, you will receive an extra issue for each year of your subscription order. *Order three years of 80-U.S. and receive three extra issues! At no cost to you!*

**Is your
TRS-80
Lonely?**

**Write today for
our**

"No Risk Offer"

SEND TO:

80-U.S. Journal
3838 South Warner Street
Tacoma, Washington 98409
Phone (206) 475-2219

Name _____

Address _____

City _____ State _____ Zip _____

Visa/MC _____

Exp. Date _____

☐ 1 yr. \$16 ☐ 2 yrs. \$31 ☐ 3 yrs. \$45

Please allow 6 to 8 weeks for your first issue.

TRS-80 is a Registered Trademark of the Tandy Corp.

INVADERS (From Page 28)

your battle against the alien critters. Too, the aliens move across the screen well, and quickly. The play is good and in real time. Its a fine version.

COLOR INVADERS has eight skill levels and a maximum of 999,999 points. Computerware asks for notification of anyone who makes more than 15,000 on skill level eight. In short, it is a demanding game.

I liked **COLOR INVADERS** and you will, too.

Review...

NEW SYSTEM CARD HAS IT ALL

Do you spend a lot of time thumbing through *Getting Started With Color Basic* and *Going Ahead With Extended Color Basic* looking for the exact syntax for some command that isn't quite explained to your satisfaction on the system card you got with CoCo?

Did you ever wish there was just a little more information somewhere...that was easy and quick to get to?

Enter the **TRS-80 COLOR BASIC AND EXTENDED SYSTEM REFERENCE CARD** from Nanos Systems Corp., P. O. Box 24344, Speedway, IN, 46224, (\$4.95). It is a shirt-pocket foldup card that's 16 pages long and just what the doctor ordered!

And, just like CoCo, it is in eight colors -- plus grey, white and black. No more trying to figure out whether this CHR# puts a red or a magenta block in such-and-such a place. Its all here, and in color.

Want to know when **PLAY** and **SOUND** shift octaves? The notes are represented on a staff ... and the notes shift colors, too, when the octaves shift.

There is a very well-done illustration of **PRINT USING**, all error messages with short explanations, and a list of derived functions. Also: detailed instructions for playing music, making a circle and drawing. There are the CoCo's color groupings, a screen line layout and a line printer control code command set (for the LP VII).

We are very impressed with this product and feel it will be helpful to anyone who programs in BASIC.

Review...

LIGHT PEN OFFERS INTERESTING IDEAS

One of the really interesting possibilities for a few different applications with our CoCo comes from such gee-whiz things as a light pen.

One specifically made for CoCo is now available from Moses Engineering (Regent Drive, Route 7, Greenville, SC, 29609, \$19.95 kit, \$39.95 assembled with joystick).

The Moses light pen uses the right joystick and the JOYSTK(0) reading to operate. It senses the brightness of colors on the screen and, if the software gets a reading matching the brightness, it can be programmed to do various things. Needless to say, this opens up all sorts of possibilities.

This particular product comes in two forms -- assembled and with a joystick attached and unassembled. Even the most klutzy of you need not fear the kit -- it was easy to assemble, took only 20 minutes, and did not require any messing with the CoCo itself.

To do the assembly, just open the joystick up, remove the innards, drill a hole for a phono jack (which is supplied) and solder two connections from the phono jack to two clearly marked parts of the joystick control. Put the whole thing back into the case and screw it back together. (No kidding, friends, I really can't do this kind of stuff well, but it was easy.)

You can buy the kit assembled for \$20 more, and you get another joystick. The modification does not hurt the joystick.

Then, when you want it, you plug the light pen in the phono jack on the joystick and you're ready.

The sample programs Moses Engineering supplies are just that, samples. They are not sophisticated, but are to show what the light pen can do. It has excellent potential.

In one program, you simply point the light pen at the end of a cannon, and, after reacting to the reading, the cannon fires at the top of the screen. In another, the screen is divided into three colors and the pen reads the relative brightness of the colors and tells you which one it is. These are, however, quite simple programs which -- being in BASIC -- take some time to react. It boggles the mind what one might do with some of the really good software -- in BASIC or machine language -- were it adapted to the light pen.

We believe you'll find this an interesting accessory and will open up several programming possibilities for you.

? #-2, (From Page 1)

subscription rates. Honestly, we've held off on them as long as possible. I did a little checking with some of you by telephone, and the overwhelming response was that the RAINBOW was worth our new base rate of \$16. Please note: All of you who have helped us get started can renew your subscriptions at the current \$12 base rate for a limited time. Its a way of mixing the bad with the good and, in a way, saying "thank you" for your confidence in our ability to provide you with a good magazine in a timely manner.

Our Canadian and Mexican subscribers will note that their postage differential also increases. I am very sorry about this, but there is just no option. Canadian and Mexican postal regulations require us to mail to those countries in certain ways -- and the ways are expensive. Believe me, we make absolutely no money on the portion of Canadian and Mexican subscriptions we are forced to charge for postage.

Of course, Canadians and Mexicans will be able to take advantage of the special renewal rate on our base subscription. But, those renewals must include the additional postage charges. If anyone has an idea of a way to reduce these charges, we'll do it -- and pass the savings on back to you either in a subsequent announcement or in a refund.

Now to the good news! For all those who don't like to key in our listings, we call your attention to the announcement inside about RAINBOW ON TAPE. We've thought long and hard about doing this -- and finally arranged a way to handle it so that you can get a quality product at the lowest possible cost. Incidentally, RAINBOW ON TAPE will be mailed first class mail, so it should come within a couple of weeks after you receive the

RAINBOW. For those of you who choose to subscribe to RAINBOW ON TAPE, you'll get a price break and quicker delivery. There will be no documentation sent with RAINBOW ON TAPE, the documentation is in the magazine itself.

Incidentally, the RAINBOW is now a truly international publication. A separate edition is being published in Australia for Australian and Asian markets through a license to Gregg Wilson of Australia. Gregg, who's a most interesting and charming fellow, also holds license rights to much of the software you can buy through our advertisers in this country and Canada.

Finally, we're planning an announcement shortly that should be of interest to everyone who purchases software. We hope it will be an answer to the problem of availability of advertised software. More about this later.

And, thanks to all of you for your interest and continued support of the RAINBOW!

JARB SOFTWARE

1169 FLORIDA ST.

IMPERIAL BEACH, CA 92032

LASER STAR & HELO BATTLE.....\$14.95

JARBCODE.....\$14.95

PSYCHIC APTITUDE TEST &

JARB BIORHYTHM.....\$14.95

JARB PRINTER UTILITY KIT.....\$14.95

Programs on quality data Cassette with complete documentation.

COD orders accepted. For regular mail, please add \$1 for shipping and handling. California residents aff 6% state sales tax.

Call or write for free catalog of available programs. No collect calls please. (714) 429-5516.

All RAINBOW subscribers are eligible to deduct \$2 from cost of each program.

TRS-80 COLOR COMPUTER BRICKAWAY!

A fast action, machine
language game in color
with sound-on cassette

\$7.00

4K or 16K

Joysticks required.



Britt Monk, CDP
P.O. Box 802
Elyria, Ohio
44036

THREE NEW WORD PROCESSORS OFFER A VARIETY OF FEATURES

By Lawrence C. Falk

Three more word processing systems have hit the market since our last look at these programs, and all three have a number of excellent features to offer for the CoCo owner looking for a way to have his computer (and printer!) help him put words on paper.

Among the systems is Tandy Corp.'s entry into the field, appropriately named *COLOR SCRIPSIT*, Nelson Software's *SUPER COLOR WRITER* and *TEXTPRO* from Cer-Comp. All three programs are in machine language, which give a fast reaction to operator input and all have a variety of features. These programs, and the four word processors reviewed in the December edition of *the RAINBOW*, give a wide range of software from which to choose. Perhaps no single computer has as much word processing software available as does CoCo. And that is a point which should not be missed by your friends seeking to buy a computer.

Too, we believe that the preponderance of word processing software means that CoCo owners will have a variety of other business and utility oriented programs to choose from in other areas as well. Software support? Here it is in abundance -- for every need and every pocketbook.

TEXTPRO is, as we said, a machine language program which uses the "regular" screen to display letters -- that is, black letters on a green background for upper case. It is a line-based text editor, in that each line is numbered, by the writer or by the program.

You can number lines manually, much the same as you number BASIC programs. Or, you can let *TEXTPRO* do it. Its much easier to assign the task to the program -- and once that is done *TEXTPRO* does provide a simple way to insert lines: All you do is insert a line by using a number in between those already in existence. Since this is so much like the way you program in BASIC, it comes naturally.

TEXTPRO also uses commands similar to BASIC commands to perform many of its functions, such as copying lines from one part of the text file to another, deleting lines and moving them. One would suppose it could also be used to perform major surgery on BASIC programs -- so long as they were saved in the ASCII format. We have not tried this, but -- especially with the line numbers making it easy -- it seems a real interesting possibility.

The program's "replace" function is excellent, it will replace one text string with another with the blink of an eye. However, its "search" does not lend itself to the line-basis format, since it displays *all* the lines which contain a particular text string -- and these can scroll off the screen.

TEXTPRO, as *COLOR SCRIPSIT* and *SUPER COLOR WRITER*, has a true "scroll" through the text buffer (the characters you input). Its "scroll" is based more on lines, however, sometimes making it a bit difficult to follow in the text entry mode. However, in the edit mode, the cursor can be moved through the buffer at will. The editor is efficient and easy to use and the commands to do the most common things are easy to learn.

COLOR SCRIPSIT uses a red screen with a yellow "status line" on the bottom which tells you at a glance what amount of memory is left, what line you are on and what position in that line the cursor presently occupies. This is the most sophisticated status update of any of the seven word processors we have seen and is very similar to the status line which all other versions of *Scrpsit* use. There is also a little box which tells you whether you are in capital or lower case letters. Upper case letters are shown backgrounded in red -- similar to the black on the familiar text screen.

COLOR SCRIPSIT also uses the "regular" 32-character screen, but at any time you wish.

with a difference. As reported previously in *The Pipeline*, it flips screens on the same line to give you 64 characters of width in the same line. However, once the display is "flipped," you cannot see the first part of the line. You have true scrolling in that you can move the cursor through the text at will

As far as editing is concerned, you can insert, delete and change characters easily. This program also uses a device called wordwrap (as does *SUPER COLOR WRITER*), which keeps words from breaking up at the end of a line. *COLOR SCRIPSIT* goes this one better, however, and allows for hyphenation of words. The program allows you to set the amount

(Continued on next page)

of characters you want it to use in looking for possible places to hyphenate. Once you place the program in the hyphenation mode, it moves through the text and locates all the possible hyphens. When it finds one, it gives you the option of moving the hyphenation to a logical point or just leaving the word alone.

COLOR SCRIPSIT also supports finding and replacing text. It has the added feature of giving you an option as to whether you want to change a particular string after it has been found.

This is pretty important. As an example, suppose you asked someone to type in something for you, and the person typed in all the letter "i's" without capitalizing them. You could use this feature to go through the text and locate the lower case "i's" and make them "I's." The problem is, the program would also locate all the "i's" in the middle of words as well. Because you can give a yes/no decision to any change, it makes this sort of thing easy to use.

SUPER COLOR WRITER is now available. It uses a full-scroll text buffer and a "normal" screen, with the green and black reversed -- much as does **WORD PROCESSOR/TEXT EDITOR** does. This makes the screen very readable in the standard 32-character line. And, if you don't like the color set, you can switch it (to orange letters!).

This program has many of the same features the others do. Every function has a control key, and there are a large number to keep track of. For this reason, probably, a "help" screen is available -- showing the most-used commands. This is a nice touch.

The **CLEAR** key is the control. As an example, to delete a character, you hit **CLEAR** and "D". To get the help screen, its **CLEAR** and "H". The program has a "status line" at the top of the screen and the cursor changes colors, depending on what sort of mode you're in. This is helpful in keeping things straight.

SUPER COLOR WRITER has a unique feature in its search command, the ability to use a "wild card" to mask letters. Now, let's say you never learned the old rule that goes "i before e, except after c" and you have spelled several words like "recieved," "recieve" and so on. You want to change them. You can "mask" the "ie" out, and find all occurrences of the word with either spelling.

All three programs do all of the "simple" things like move and copy text, center material and justify copy. Keep in mind these are difficult to do on a typewriter -- and extremely easy with a word processing program. Also remember that studies show you can type much more quickly on a computer screen than on a piece of paper.

Getting information in is only half the battle, however. The other half is in the printing. All programs allow you to set such things as right and left margins, line spacing and number of lines per page. All also allow you to set "headers" and "footers," -- those standard lines that run on the top and bottom of the page when you have long documents. All also allow the computer to number the pages for you.

TEXTPRO and **SUPER COLOR WRITER**, however, also allow you a great amount of leeway in the use of control codes. Control codes are those things you send to a printer to change the type size and the line. For instance, in the **LP VII**, the **CHR\$(30)** is a control code to turn double-wide letters.


These two programs allow you to

HELP STAMP OUT **BIG UGLY GRAPHICS**

STAMP OUT **BUGME's** USE **MPP**

DON'T

- BUG ME -



BIG UGLY GRAPHICS

MOVING EVERYWHICHWAY

I'M AN

MPP

MOTION PICTURE PROGRAMMER

SUPERIOR GRAPHIC SOFTWARE

REPRINTS - MEMBERSHIP - T-SHIRTS - BUTTONS - AVAILABLE FROM THE BUGME ASSOCIATION

imbed the control codes into your text, and change things "on the fly." Too, both also allow you to change the parameters you selected to print your document while you are doing the printing. This can be real important if you are trying to set a half-column, go to a full column for several lines, and then go back to a half column. It also means if you are using a printer which has different character sets, you can vary the character sets just by typing in a control code.

All three programs use tape for storage. *TEXTPRO* comes in a disk version as well. *SUPER COLOR WRITER* is advertised in both Rom Pak and disk versions, but we did not receive them for review. Since the tape version is in machine language, it is difficult to adapt to disk, but, I suppose, could be done. With *COLOR SCRIPSIT* on a ROM Cart, you cannot use a disk drive, because the disk will have to use the same port. *COLOR SCRIPSIT* does have the plug-in-and-run advantage, and does not use CoCo memory for the program.

As with the four word processors we reviewed earlier, each of these programs has some very real advantages. We hope this rundown will help you choose the right one for your uses.

TEXTPRO, by Bill Vergona, Cer-Comp, 5566 Richochet Ave., Las Vegas, NV, 89110, \$39.95.

COLOR SCRIPSIT, by Robert Kilgus, at Radio Shack dealers and stores, \$39.95.

SUPER COLOR WRITER, by Tim Nelson, Nelson Software, P.O. Box 19096, Minneapolis, MN, 55419, \$49.95 tape; \$74.95 Rom Pak; \$99.95 disk.

Software Review...

MONEY MINDER II WILL HELP BUDGET

MONEY MINDER II from Harmonycs (P.O. Box 1573, Salt Lake City, UT, 84110-1573, \$8.95) is a fine addition to a software library and a useful program for anyone who wants to keep track of where his money is going.

Designed to operate on the 16K CoCo, the program allows you to set up to 56 categories of expenditure and assign checks to any of them. It also will work against a budget, so that you can place deposits in the categories as you wish and then monitor how you draw checks against them.

The large number of categories can be especially useful when you come to income tax time. And, since there are also printout and data tape save routines, you can keep track of things all year long and get a printout at any time.

If we have one complaint about *MONEY MINDER II*, it is the documentation. It would be greatly improved with some examples running all the way through the text and, we believe, would help the user. We were impressed by the program but wished access to its features had been made easier.

That being said, *MONEY MINDER II* does have some fine features. We particularly liked the way category balances are displayed in that if you only use part of the categories the program will not force you to "look at" a page or two of empty screens.

Too, a routine to allow you to look at the last entry in each category is included. This is especially useful when you wonder just "where you are" in the program. Despite the best of intentions, you know you're not going to enter in checks every day as you write them. The last entry feature works with keyboard or data tape entries -- whichever is last.

Finally, there is a particularly helpful feature called "Transfer Balances." Simply put, it allows you to handle your entries a week (or month, or whatever) at a time. It keeps a running total of balances forward and does not require you to read in long amounts of data from tape to get "up to date."

We believe you will be pleased with this program.

Software Review...

DANCING DEVIL IS DEVILISHLY FUN

You, or your kids, can keep busy for hours with *DANCING DEVIL*. It is a good program that will provide a lot of enjoyment.

Available from Tom Mix Software (3424 College N.E., Grand Rapids, MI, 49505, for \$14.95), this program lets you combine both musical and artistic talents.

Its somewhat similar to another program available for the black and white TRS-80's, but now it is available for the CoCo with all the enhancements CoCo can give it.

DANCING DEVIL features a little devil who will dance to any song you want to enter into the Computer. You do this through a menu system that is easy to use and the note selection is very easy. Even if you don't want to use a song, *per se*, you can just use notes.

Then, in step two, you program in the steps the devil can make in connection with the notes. Again, a

(Continued on next page)

DEVIL (From Page 35)

simple menu format is used to make things extremely easy. And, the devil will do a devilish number of things, from jumps to the Charleston.

Finally, you select the performance item on the menu, a curtain goes up, and the devil does his stuff. You can choose how fast you want him to run through it, and how many times (1 to 255) you want him to repeat. When the performance is over, the devil bows and the curtain goes down.

You can save your routines to tape and load them back from memory. In addition, there are two pre-programmed routines for a demonstration.

DANCING DEVIL rates a "NEAT!" from the resident 13-year-old. A major accolade!

Music...

JULIE'S SONG...

Julie Kerr, 10, of Bellevue, Wash., is as interested in music as she is in computers. So, she wrote the following program as an example of how CoCo can be used in a musical application.

The program generates a random sound for a couple of seconds, then starts at another random sound. You can maneuver the second sound up or down the scale until you think it matches the first. The program will tell you how close you came to a match!

Julie's mother, by the way, says it is only Julie among her family who consistently gets the "Tuned By An Expert" message.

This program's idea, and the code for it, was Julie's idea and inspiration. We hope you like it.

The listing:

```
5 ' TUNING
7 ' BY JULIE KERR
10 CLS5
20 PRINT "LISTEN TO THE FIRST SO
UND"
30 PRINT "THEN LISTEN TO THE SEC
OND SOUND"
40 PRINT "TUNE THE SECOND SOUND
TO THE"
50 PRINT "FIRST SOUND BY PRESSIN
G <L> TO"
60 PRINT "GO LOWER AND <H> TO GO
HIGHER."
70 PRINT "WHEN YOU THINK IT'S IN
TUNE,"
80 PRINT "PRESS <T>."
90 PRINT
100 FOR T=1 TO 1500:NEXT T
```

```
110 N=RND(100)+50
120 SOUND N,100
130 T=RND(100)+50
140 SOUND T,2
150 C$=INKEY$
160 IF C$="H" THEN T=T+1
170 IF C$="L" THEN T=T-1
180 IF C$="T" THEN GOTO220
190 IF T=0 THEN T=1
200 IF T=201 THEN T=200
210 GOTO140
220 IF T=N THEN PRINT"TUNED BY A
N EXPERT!":GOTO260
230 IF T>N-10 AND T<N+10 THEN PR
INT "VERY GOOD":GOTO260
240 IF T>N-20 AND T<N+20 THEN PR
INT"YOU NEED A LITTLE MORE PRACT
ICE":GOTO260
250 PRINT "PRACTICE MAKES PERFEC
T"
260 PRINT"THE TONE WAS"N"- YOU C
HOSE" T
```

FREE GAME --- BREAK OUT

SEND A S.A.S.E. FOR A FREE LISTING OF THIS PROGRAM. WRITTEN IN MACHINE LANGUAGE, VERY FAST, HAS ON SCREEN SCORING, ETC., NEEDS JOYSTICKS. COMES WITH COMPLETE INSTRUCTIONS ON HOW TO ENTER IT AND RUN THE GAME.

THE SOLUTION ----- \$12.95

THE SOLUTION SOLVES THE PROBLEM OF THE COLOR COMPUTER'S SMALL SCREEN SIZE. FEATURES INCLUDE:

- 1- FULL ASCII CHARACTER SET
- 2- LOWER CASE CHARACTERS WITH DECENDERS
- 3- 42 CHARACTERS X 21 LINES DISPLAYED
- 4- USER MAY HAVE TEXT AND GRAPHICS AT THE SAME TIME
- 5- INTERFACES DIRECTLY WITH BASIC
- 6- FAST-PRINTS AT OVER 500 CHARACTERS PER SECOND

WRITTEN IN MACHINE LANGUAGE. CAN BE SETUP ANYWHERE IN MEMORY. THE PROGRAM CAN BE SETUP TO PROVIDE 4 LINES OF TEXT AT THE BOTTOM OF A GRAPHIC SCREEN.

GRAPH LABEL ----- \$8.95

ALLOWS THE USER TO PLACE CHARACTERS ANY ON A GRAPHIC SCREEN. CAN BE USED TO LABEL HIGH RES. GRAPHICS. FULL CURSOR CONTROL, MOVE CURSOR ONE CHARACTER BLOCK OR ONE PIXEL AT A TIME. HAS FULL ASCII CHARACTER SET (5x8 DOT MATRIX), SUBSCRIPTS AND SUPERSCRIPTS, AND USER DEFINED CHARACTERS. CAN BE USED AS A SUBROUTINE OR STAND ALONE, WORKS WITH ALL 2 COLOR GRAPHIC MODES.

C.C. PILOT ----- \$5.95

IMPLEMENTATION OF PILOT FOR C.C. HAS STANDARD PILOT INSTRUCTION WITH EXTENSIONS FOR C.C. INCLUDES TEXT EDITOR AND INTERPRETER IN ONE PACKAGE. COMES WITH MANUAL AND DEMO PROGRAMS. 4K-16K. ALL \$ASICS

SUPER PILOT ----- \$9.95

PILOT FOR EXTENDED BASIC. MANY NEW FEATURES FOR GRAPHICS AND SOUND. PSEUDO COMPILED FOR FASTER PROGRAM EXECUTION. MANUAL & DEMO PROGRAMS

ART EDITOR- \$9.95 ---POOR MAN'S VERSION OF SHACK'S "ART GALLERY".

DOUBLE SIZE SCREEN PRINT- \$3.95 ---CREATES A SCREEN PRINT 6.4 X 8.1 INCHES. MUCH NICER THAN RADIO SHACK'S PROGRAM (LP-VII OR VIII REQ.)

FAST GRAPHICS PACKAGE- \$4.95 ---A MACHINE LANGUAGE PROGRAM THAT EXECUTES WITH TWICE THE SPEED OF EXTENDED BASIC. HAS LINE DRAWING PIXEL SETTING, AND SCREEN CLEAR ROUTINES. RUNS ON ALL MACHINES. GIVES 4K USERS A 128X64 GRAPHIC DISPLAY.

CALL PROGRAMS FOR 16K-EXTENDED BASIC UNLESS OTHERWISE NOTED

SNAKE MOUNTAIN SOFTWARE
P.O. BOX 5722
RALEIGH, NC 27650

TERMS-CHECK OR MONEY ORDER ONLY. INCLUDE \$1.00 FOR ONE PROGRAM, \$2.00 FOR MORE THAN ONE PROGRAM FOR SHIPPING.

WATCH OUT FOR THE WILD, WILD WEB

If you don't like spiders, don't play *WILD, WILD WEB*, because in it you are a spider and your object is to get a good, wholesome lunch.

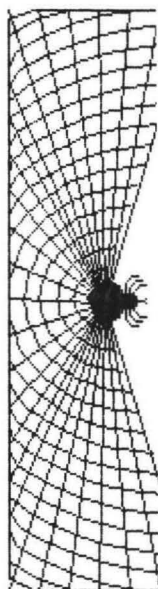
While there are many differing opinions about what a good, wholesome lunch might consist of among us humans, there is little debate among spiders. They like ants. (We are told they like moths for dinner.)

This game, brought to you by the IMB dynamic duo of Fred Scerbo and Dale Haggerty (a.k.a. Snail), will let you sit in your web and try to get some ants for lunch. Use the right joystick to direct your little web and the "fire" button to shoot out a web at the ant. You're measured on how long it takes you.

As always, please remember this game is for your personal use and pleasure and is not to be copied for any other reason. Similarly, the routines are for use in the game, but not for use in any software you write.

Get those ants!

```
1 POKE65495,0:CLER500:CLS0:SR=3
2 C=1:GOSUB3:GOT09
3 SR=3:C=C+1:P$=CHR$(128):FORI=
4 2T014:FORJ=4T013:SET(J,I,C):NEXT
5 J:NEXTI
6 FORK=0T011STEP11:FORJ=18T023:S
7 ET(J+K,2,C):NEXTJ:FORJ=17T024:SE
8 T(J+K,3,C):NEXTJ:FORI=4T014:FORJ
9 =16T025:SET(J+K,I,C):NEXTJ:NEXTI
10 NEXTK
11 FORK=0T07STEP7:FORJ=39T058:FOR
12 I=2T07:SET(J,I+K,C):NEXTI:NEXTJ:
13 FORI=3T06:SET(59,I+K,C):NEXTI:FO
14 RI=4T05:SET(60,I+K,C):NEXTI:NEXT
15 K:RETURN
16 PRINT@257,P$;:FORY=1T028:READA
17 :PRINTCHR$(A);:NEXT
18 DATA105,108,108,117,115,116,1
19 14,97,116,101,100,128,128,128,10
20 9,101,109,111,114,121,128,128,12
21 8,98,97,110,107,115
22 PRINT@329,P$;:FORY=1T012:READ
23 A:PRINTCHR$(A);:NEXT
24 DATA98,111,110,117,115,128,12
25 8,128,103,97,109,101
26 PRINT@399,CHR$(98)+CHR$(121);
27 PRINT@448,P$;:FORY=1T031:READ
28 A:PRINTCHR$(A);:NEXT
29 DATA102,114,101,100,128,115,9
30 9,101,114,98,111,128,128,97,110,
31 100,128,128,100,97,108,101,128,1
32 04,97,103,103,101,114,116,121
33 FORJH=1T02:GOSUB3:NEXTJH
34 W$="BU2U7R2D6FEU4R2D4FEU6R2D7
35 G2L2HGL2H2BD2BR12"
36 IL$="U9R2D9L2BR4U9R2D7R4D2L6B
37 R7U9R5F2D5G2L5BE2U5R2FD3GL2"
38 EB$="U9R7D2L5D2R3DL3D2R5D2NL7
39 BR2U9R5F2DGDG2L5BE2U2R2FGL2BU3
40 U2R2FGL2"
41 PMODE3,1:PCLS5:SCREEN0,0
42 DRAW"S4BM16,16C3U4L2R4BR4D4U2
43 R4U2D4BR4NR4U2NR2U2R4"
44 DRAW"S16BM10,60C4"+W$+IL$
45 DRAW"BM70,110"+W$+IL$
46 DRAW"BM130,160C3"+W$+EB$
47 FORY=0T060STEP60:FORI=34T0124
48 STEP30:PAINT(I+Y,55+WL),4,4:NEXT
```



```
I:WL=50:NEXTY
43 FORI=16T0220STEP30:PAINT(I,1
44 53),3,3:NEXTI
45 LINE(0,0)-(256,192),PSET,B:SC
46 REEN1,1:FORI=2T0100STEP8:LINE(0,
47 92+I)-(30+I,192),PSET:LINE(124+I
48 ,0)-(256,0+I),PSET:NEXT
49 FORI=0T024STEP8:LINE(0,94)-(3
50 2-I,192),PSET:LINE(256,100)-(256
51 -I,0),PSET:NEXT
52 FORWA=1T02000:NEXT:CLS0
53 PMODE4,1:PCLS5:SCREEN0,0
54 AR$="C0R18L2NE6U3L3D3L8U3L3D3
55 L8U3L3D3U5L3D5U3L3D3F2R7NG5U2R8D
56 RND5R2U2R5NF7":DRAW"S2BM118,92;
57 "+AR$
58 DRAW"C0S2BM118,122L18R2NH6U3R
59 3D3R8U3R3D3R8U3R3D3U5R3D3U3R3D3G
60 2L7NF5U2L8D2LND5L2U2L5NG7"
61 DIMA(6)
62 DIMB(6)
63 GET(108,89)-(129,95),A,G
64 GET(107,119)-(128,125),B,G
65 PMODE4,1:PCLS5:SCREEN0,0
66 CIRCLE(126,41),10,0,.9
67 PAINT(126,40),0,0
71 CIRCLE(126,52),4,0
73 PAINT(126,52),0,0
75 DRAW"S4BM126,50;C0L8G3D3BM126
76 ,50R8F3D3BM126,52L6G3D3BM126,52R
77 6F3D3BM126,54L4G3D3BM126,54R4F3D
78 3BM126,54D5NF3NG3"
79 DIMS(24)
80 GET(110,32)-(142,60),S,G
81 PCLS5
82 FORI=0T090STEP15:LINE(126,48)
83 -(0,I),PSET:LINE(126,48)-(256,I)
84 ,PSET:NEXT
85 FORI=32T0224STEP16:LINE(I,0)-(
86 126,48),PSET:NEXT
87 FORI=2T0146STEP9:CIRCLE(128,4
88 5+(I/2.5)),3+I,0,1.3,.5,1:NEXT
89 PUT(111,40)-(143,68),S,AND
90 I=126
91 SCREEN1,1
92 TIMER=0
93 C=RND(10):IFC=>6THEN101:GOTO101
94 C<=5THEN107
```

(Continued on next page)

```

99 GOTO115
101 FORY=1TO6:I=I+4:IF I=>230THE
N103ELSE105
103 COLOR5,5:LINE(I,150)-(21+I,1
56),PRESET,BF:I=10
105 PUT(I,150)-(21+I,156),A,PSET
:NEXT:GOTO97
107 GOSUB115:FORY=1TO6:I=I-4:IF
I<=10THEN109ELSE111I=230
109 COLOR5,5:LINE(I+4,150)-(25+I
,156),PRESET,BF:I=230
111 PUT(I+4,150)-(25+I,156),B,PS
ET:NEXT:GOTO97
113 GOTO113
115 IFPEEK(339)=255THEN101
117 L=JOYSTK(0)*4
119 PLAY"V3105L255BC"
121 COLOR0,0:LINE(127,70)-(L,151
),PSET:COLOR5,5:LINE(127,70)-(L,
151),PRESET:COLOR0,0
123 IFPPOINT(L,153)=5THENRETURN
125 SOUND1,1:COLOR0,5:FORW=3TO9
STEP3:CIRCLE(L,152),WS,0,.6:NEXT
WS:LINE(I-8,146)-(28+I,158),PRES
ET,BF:DRAW"S2BM"+STR$(RND(200)+2
2)+"","+STR$(RND(30))+AR$:LO=RND(
2):IF LO=>1THEN I=20ELSEI=220
127 TA=TA+1:IFTA<15THEN101
129 TE=TIMER:SE=INT(TE/60)
131 POKE65494,0:SCREEN1,0:FORW=1
TO5:PLAY"O1T55BCBCBC":NEXT:FORW=
1TO1500:NEXT

```

A SELF-MAILER SAVES TIME AND ENVELOPES

Dr. Lane Lester of Liberty Baptist College in Lynchburg, Va., didn't plan to send in a submission, but we're very impressed with the letter he mailed the other day and would like to pass its concept along as a hint to those who want to use their CoCo as a word processor and don't want to hassle with envelopes.

Dr. Lester has formatted his word processing program to use the first page as a self-mailer that doesn't require an envelope. Using plain white printer paper, he sets his return address on the left-hand margin 26 lines down from the top of the paper. Then, he starts the address of the person to whom he is writing 33 lines down and 35 spaces

(Continued on Page 40)

```

133 CLS0:PRINT@228,"YOU TOOK";:P
RINTUSING"####.##";SE;:PRINT" SE
CONDS.";

```

```

135 FORI=1TO3000:NEXT:RUN
137 REM 'THE WILD WILD WEB' BY
FRED B. SCERBO & DALE 'SNAIL'
HAGGERTY, COPYRIGHT (C) 1982,
IMB, ILLUSTRATED MEMORY BANKS
BOX 289, WILLIAMSTOWN, MA
01267-0289

```



COLOR COMPUTER

COMPVOICE

Give your computer a voice of its own - build speech into your BASIC programs. This machine language program is a must for your library - no hardware modification needed. \$44.95

- EXTEND MEMORY FROM 16K to 32K
- 100% Compatible With Extended Basic
- No Soldering Or Modification
- Fits Inside Computer
- \$79.95

RAMCHARGER 32K UPGRADE

Space Invaders

Space War

- The Best Games Available
- High Resolution Graphics
- Fast, Machine Language
- Ext. Basic Not Required
- \$21.95 each, cassette
- \$25.95 each, disk

EXTENDED BASIC GAMES

- LOTHAR'S LABYRINTH Word Search Puzzle
- BATTLEFLEET Battleship Search Game (one or two players)
- SPACE TRADERS Galactic trading game

\$14.95/ea.



THE FACTS

At last, a complete description of the "guts" of the Color Computer. Specs on all the ICs, complete schematics, theory of operation and programming examples.

\$14.95

TRS-80

MADNESS & THE MINOTAUR

The best adventure game available for the color computer. Over 200 rooms, 6 creatures, 8 magic spells, loads of treasures. Written in machine language, extended Basic not required. \$19.95

NEW EXTENDED BASIC GAMES!

- SUB HUNT \$14.95
 - LASER ATTACK \$10.95
 - ALCATRAZ II \$8.95
- Complete with high resolution graphics and sound.
- CROID \$12.95
- Eliza type artificial intelligence game.

SOUNDSOURCE

Store music or voice from a cassette tape in the computer and display it on the TV screen. Shorten it, lengthen it, modify it and replay it through the TV's sound system. Build and test your own sounds for games. No hardware mods needed.

\$24.95

UTILITIES

- EDITOR/ASSEMBLER \$34.95
- SUPER MONITOR 19.95
- EPROM PROGRAMMER 89.95 (Program your own ROMs for the ROM-PAC port)
- MAGIC BOX 24.95 Load MOD I/III Tapes into the color computer
- TYPING TUTOR 19.95
- TEXT EDITOR

DEALER INQUIRIES INVITED



SPECTRAL ASSOCIATES P.O. BOX 99715

Tacoma, Washington 98499

WRITE FOR COMPLETE CATALOG ADD 3% FOR SHIPPING \$1.00 minimum

Allow 2-3 wks. for delivery

(206) 565-8483

VISA OR MASTERCARD ACCEPTED

QUALITY SOFTWARE FOR TRS-80 COLOR!



ADVENTURESIII

For TRS-80, and COLOR-80. These Adventures are written in BASIC, are full featured, fast action, full plotted adventures that take 30-50 hours to play. (Adventures are inter-active fantasies. It's like reading a book except that you are the main character as you give the computer commands like "Look in the Coffin" and "Light the torch.")

Adventures require 16K on COLOR-80 and TRS-80. They sell for \$14.95 each.

ESCAPE FROM MARS

(by Rodger Olsen)

This ADVENTURE takes place on the RED PLANET. You'll have to explore a Martian city and deal with possibly hostile aliens to survive this one. A good first adventure.

PYRAMID (by Rodger Olsen)

This is our most challenging ADVENTURE. It is a treasure hunt in a pyramid full of problems. Exciting and tough!

TREK ADVENTURE (by Bob Retelle)

This one takes place aboard a familiar starship. The crew has left for good reasons - but they forgot to take you, and now you are in deep trouble.

DEATH SHIP (by Rodger Olsen)

Our first and original ADVENTURE, this one takes place aboard a cruise ship - but it ain't the Love Boat.

VAMPIRE CASTLE (by Mike Bassman)

This is a contest between you and old Drac - and it's getting a little dark outside. \$14.95 each.

SPACE SHUTTLE

ONE OR TWO PLAYER HIGH RES GAME - Your mission is to dock with an orbiting space platform - but you may have to land on the planetary surface for refueling first. A real value in a high res real time game. \$6.95.

KILLERBOT - (Available in 4K) - Real time action at 20 levels of difficulty as you run, sneak, and dodge your way through a bloody field of Killer Robots. Get across or die! Joysticks or Keyboard controls. TRS-80 COLOR (ANY BASIC 4K or more.). \$9.95.

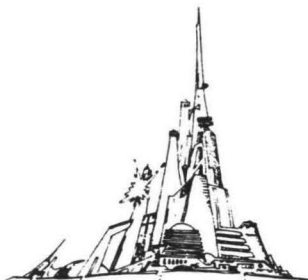
SLASHBALL (Available in 4K) - This one is best described as a thinkers arcade game. It rewards fast reflexes and clear thinking - like nothing you have ever seen before. It is one of our best family games for one or two players. \$9.95.

TIMETREK - A REAL TIME, REAL GRAPHICS STARTREK. See your torpedoes hit and watch your instruments work in real time. No more unrealistic scrolling displays! \$14.95.

STARFIGHTER - This one man space war game pits you against spacecruisers, battlewagons, and one man fighters, you have the view from your cockpit window, a real time working instrument panel, and your wits. Another real time goody. \$9.95

BATTLEFLEET - This grown up version of Battleship is the toughest thinking game available on OSI or 80 computers. There is no luck involved as you seek out the computers hidden fleet. A topographical toughie. \$9.95

LABYRINTH - 16K EXTENDED COLOR BASIC - With amazing 3D graphics, you fight your way through a maze facing real time monsters. The graphics are real enough to cause claustrophobia. The most realistic game that I have ever seen on either system. \$14.95.



QUEST - A NEW IDEA IN ADVENTURE GAMES! Different from all the others, Quest is played on a computer generated map of Alesia. Your job is to gather men and supplies by combat, bargaining, exploration of ruins and temples and outright banditry. When your force is strong enough, you attack the Citadel of Moorlock in a life or death battle to the finish. Playable in 2 to 5 hours, this one is different every time. 16K COLOR-80 OR TRS-80 ONLY \$14.95.



SPACE ZAPPER - Protect your central Star Base from ships that attack from all four sides. Fast reflexes are required as the action speeds up. Great for kids or Dads. This game has high speed high resolution graphics and looks as if it just stepped out of the arcades. - 16K extended or 32K disk. BASIC TRS-80 Color only. \$14.95.

Please specify system on all orders

This is only a partial listing of what we have to offer. We have arcade and thinking games, utilities and business programs for the OS1 and TRS-80 Color. We add new programs every week. Send \$1.00 for our complete catalog.



TRS 80

2352 S. Commerce, Walled Lake, MI 48088
(313) 669-3110

AARDVARK - 80

TRS 80 COLOR

ENVELOPE (From Page 38)

from the left-hand margin.

Once that information is entered, he has his printer move to the top of the next page, prints a "letterhead," spaces down several spaces and starts the letter off with the date and "Dear _ _ _:" salutation.

Owing to the number of word processors on the market, we won't try to tell you how to format yours, but here's how the program *could* be written in BASIC. With every word processor we've seen for the CoCo, the actual formatting should be easy to accomplish.

```
10 FOR X=1 TO 26:PRINT #2: NEXT
20 PRINT #2,"Lane P. Lester,
Ph.D."
30 PRINT #2,"Liberty Baptist
College"
40 PRINT #2,"Lynchburg, VA 24506"
50 FOR X=1 TO 4:PRINT #2:NEXT
60 LINEINPUT "NAME";A$
70 LINEINPUT "STREET ADDRESS";B$
80 LINEINPUT "CITY, STATE, ZIP";C$
90 PRINT #2,TAB(35)A$:PRINT
#2,TAB(35)B$:PRINT #2,TAB(35)C$
100 FOR X=1 TO 33:PRINT #2:NEXT X
```

Once you've done this, simply use whatever you wish to make a "letterhead" and write the letter. Then, once done, make a triple fold in the paper and you have a letter on one side and (on the top sheet which becomes the "back") an envelope, all addressed and ready to mail. Just tape the paper together.

It's a neat trick that can save you hours of time.

Utility...

FOR THE GAMERS... SCREEN-SCORING

By Charles H. Santee

I have enjoyed the *RAINBOW* very much and, especially, the *SNAIL INVADERS* game by Fred Scerbo and Dale Haggerty of IMB. It is especially interesting.

Being very interested in on-screen scoring on the graphics pages, I have written up a routine which, I believe, will conserve a great deal of memory. It is one I have been using in games.

To insert this routine into a game, use lines 1000 to 2130 without the documentation included in the listing so you can follow the routine's logic. Or, you can run the program as is to see how it works.

A few notes...

1. If you would like a set number of digits on the screen for the score

(e.g., 0057), edit line 2030 as:
LS=LEN(SS\$):SS\$=RIGHT\$(SS\$,LS-1)
SS\$=STRING\$(5-LS,"0")+SS\$

2. If you want a right to left "flip" of numerals delete lines 2105 and 2115 and edit the lines listed below as follows:

```
1015 NEXT X
:E$="C1BRNU4RU4RD4RU4RD4RU4RNL4D2NL4
D2L8C3":RETURN
```

```
2085 GG$=GG$+E$+G$(V)
```

3. When the above method is used and a score is very large, GG\$ may give an LS error.

The listing:

```
5 '%% CLEAR ENOUGH SPACE FOR
THE GRAPHICS AND STRINGS %%%
10 CLEAR 600
15 GOSUB 1000:'%% GO TO THE
SUBROUTINE WHICH MAKES A
FILE OF GRAPHIC NUMBERS %%%
20 '%% THIS ROUTINE SELECTS
SOME NUMBERS TO BE DRAWN
IN A GAME, THE NUMBERS
DRAWN WOULD BE THE SCORE %%%
25 CLS:INPUT"FIRST NUMBER";F
30 INPUT"LAST NUMBER";L
35 INPUT"INPUT STEP";ST
40 '%% SET UP GRAPHIC SCREEN %
45 PMODE 3,1:PCLS:SCREEN 1,0
50 '%% the numeric variables SC
is the score %%%
55 FOR SC = F TO L STEP ST
60 GOSUB 2000
65 FOR P = 1 TO 200:NEXT P:'%%
PAUSE SO THAT THE SCORE CAN
BE VIEWED
70 NEXT SC
80 GOTO 25:'% TRY NEW NUMBERS %
1000 '$"$"$"$ This subroutine
sets up a table of graphic
strings to be used in the
draw statement which can be
used to draw the numbers
0 through 9 "$"$"$"$
1005 FOR G = 0 TO 9
1010 READ G$(G)
1015 NEXT G:RETURN
1020 '### THE NUMERAL 0 ###
1025 DATA"BR2U4R3D4NL3BR3"
1030 '### 1 ###
1035 DATA"BR4NU4BR4"
1040 '### 2 ###
1045 DATA"BR2U2R3U2NL3BD4NL3BR3"
1050 '### 3 ###
1055 DATA"BR2R3U2NL2U2NL3BD4BR3"
1060 '### 4 ###
1065 DATA"BR2BU2NU2R3U2D4BR3"
1070 '### 5 ###
1075 DATA"BR2R3U2L3U2R3BD4BR3"
1080 '### 6 ###
1085 DATA"BR2U4NR3D2R3D2NL3BR3"
1090 '### 7 ###
```



```

1095 DATA"BR2BU3UR3D4BR3"
1100 '### 8 ###
1105 DATA"BR2U4R3D2NL3D2NL3BR3"
1110 '### 9 ###
1115 DATA"BR2BU2NR3U2R3D4BR3"
2000 '"$"$"$ This subroutine
      converts the numeric
      variable into a graphic
      variable and draws the
      numbers on the screen
2005 '%% INITIALIZE THE GRAPHIC
      VARIABLE %%
2010 GG$=""
2015 '%% CONVERT THE NUMERIC
      VARIABLE TO A STRING %%
2020 SS$=STR$(SC)
2025 '%% DELETE THE LEADING
      BLANK FROM THE STRING %%
2030 LS=LEN(SS$):SS$=RIGHT$(SS$,
      LS-1)
2035 '%% The next step is to
      pick off each decimal of
      numerical string, convert
      that string back to a
      numeral, and use that
      numeral to call up the
      graphic string.
2040 '%% The graphics are
      combined to form one

```

```

      graphic for drawing the
      score.
2045 L=LEN(SS$):'### DEFINE
      THE NUMBER OF NUMERALS
      IN THE STRING
2050 '### REPEAT THE STEPS BELOW
      FOR EACH NUMERAL
2055 FOR A=1 TO L
2060 '%% DEFINE EACH NUMERAL IN
      THE STRING
2065 N$=MID$(SS$,A,1)
2070 '%% DETERMINE THE VALUE
      OF THE NUMERAL %%
2075 V=VAL(N$)
2080 '%% USE THAT VALUE TO
      CALL UP THE GRAPHIC
      REPRESENTATION OF THE
      VALUE AND ADD THE GRAPHIC
      STRINGS TOGETHER %%
2085 GG$=GG$+G$(V)
2090 '%% DO IT AGAIN FOR
      THE REST OF THE NUMERALS %
2095 NEXT A
2100 '%% ERASE THE LAST GRAPHIC
      BY REDRAWING THE OLD SCORE
      WITH THE BACKGROUND COLOR
2105 DRAW"BM0,20C1S8"+OG$
2110 '%% REDEFINE THE NUMBER TO
      BE ERASED NEXT TIME (OLD
      GRAPHIC)
2115 OG$=GG$
2120 '%% DRAW THE NEW GRAPHIC
      (PRESENT SCORE)
2125 DRAW"BM0,20C3S8"+GG$
2130 RETURN

```

Discover the RAINBOW in your TMS-8000 COLOR COMPUTER!
We at Rainbow Connection are dedicated to offering quality programs in full color and sound at an affordable price for the revolutionary TMS-8000 Color Computer.
All of our UK programs (4,000 Series) are compatible with all models of the Color Computer and require only a standard cassette player. Tapes are produced one program per side for convenient loading in fast-rewind U-S cassettes.
At less than \$6.00 per program (plus ship.), you can afford several hours of fun!

| | |
|---|--|
| <p>Break through the walls of colored bricks by maneuvering the paddle to deflect the bouncing ball! Autopilot.</p> <p>BRIKOUT (Joystick opt.) * Twinkpak #4001 * T-EE \$11.95 WORD GUESSES Guess the words played at random from the computer's list. User selectable.</p> | <p>Zero in on enemy starships before firing your phasers! Difficulty increases as you enter warp drive.</p> <p>STARFIGHTERS (Joystick opt.) * Twinkpak #4002 * K102 \$11.95 TIC-TAC-TOE Beat the computer playing this age-old favorite or lose to calculating opponent.</p> |
| <p>Flying over enemy territory, you drop low for your bomb run, but watch out for enemy flak! Realistic bomb trajectories.</p> <p>B-17 BOMBER (Joystick opt.) * Twinkpak #4003 * T-EE \$11.95 METRIC MAGIC Calculates English/metric conversions with graphic representations.</p> | <p>Displays graph of your physical, emotional, and intellectual cycles. Make the most of good, bad, critical days!</p> <p>BIOMETER (Printer opt.) * Twinkpak #4004 * T-EE \$11.95 MINEMINE Cross the minefield aided by the mine detector. Traps and hidden mines.</p> |
| <p>Vegas version of famous card game. One to three players vs. computer. Betting, full deck, graphics!</p> <p>BLACKJACK * Twinkpak #4005 * T-EE \$11.95 MATH TUTOR CAL program teaches basic math skills as it holds interest.</p> | <p>Computerized version of the famous board game. Match the words behind the squares to complete the puzzle!</p> <p>CO. PUZZLE * Twinkpak #4006 * T-EE \$11.95 CRICK-A-LOOK Watch the computer roll three dice across the screen and hit your number.</p> |
| <p>Guess the secret number from clues provided. Ratings, evaluations, skill levels. Highly addictive!</p> <p>COMPUHIT * Twinkpak #4101 * T-EE \$11.95 JACKPOT Pull the lever—watch the wheels turn to produce a jackpot!</p> | <p>Pilot your craft to a safe landing on the moon's rocky surface. Watch your gauges or you'll crash!</p> <p>LUNAR LANDING (Joystick opt.) * Twinkpak #4102 * T-EE \$11.95 Compute against opponents in time, and accuracy. Great party fun!</p> |
| <p>Multiple #4001 Above 4 Twinkpaks (8 programs) Case-\$26.95 Disk-\$31.95</p> <p>Name _____ Address _____ City _____ State _____ Zip _____ Ilan _____ Amount _____ No res 5% tax Ship/handling 2.00 Total enclosed _____ Dealer inquiries invited.</p> | <p>Multiple #4002 Above 4 Twinkpaks (8 programs) Case-\$26.95 Disk-\$31.95</p> <p>Accumulate wealth, weapons, magic as you wind your way down 13 floors of dungeon knocking down walls, monsters.</p> <p>SCORPION OF EXTREMA Single \$16.00 \$16.95 16K Ext Basic Graphics adventure game—real time, arcade sound. Hit 10 res. 5% tax. \$26.95 4.0 res. 5% tax.</p> |

Not affiliated with the RAINBOW magazine

Special!!! \$2.00 off each item to all RAINBOW subscribers.

RADIO SHACK SOFTWARE
2014 4th Plaza East
Richmond, VA 23261

Utility...

AN 8-BIT DRIVER FOR BASIC USE

By Mark Reeves

Yes, you can get a free eight-bit printer driver from Radio Shack that will allow you to print the bit image graphics and so on (as well as access some of the special characters on the LP VIII). One of the problems with it, though, is that it is in machine language and, sometimes, can be a little difficult to use. But what do you want, its free!

At SNAKE MOUNTAIN SOFTWARE we wanted to have a little more versatility in an eight-bit driver, especially a program that would allow us to move it anywhere in memory. That is important, because it lets us put the driver in some vacant place in the RAM -- out of the way of any program.

Still, it is important that a driver be in machine language, because of the speed. The program below is in BASIC, but POKES machine

(Continued Next Page)

8-BIT (From Page 41)

code into memory. And, because the machine code is position-independent, it can be used easily, simply and anywhere in memory.

There is nothing special about this program. The only thing you might have to adjust is the location where you wish the driver to load. This is accomplished simply by changing the value of the variable LD in line 200 to whatever decimal number you wish.

If you have an assembler, it's easy to translate the hexadecimal codes in the data statements into assembly language Op Codes, assemble this and make a tape. It works just as well in BASIC, but you might want to get some practice working with the assembler.

The listing:

```
200 LD=492: 'OR ANY ADDRESS YOU WISH
210 FOR I=0 TO 40
220 READ VL$
230 PK=VAL("&H"+VL$)
240 POKE LD+I,PK
250 NEXT I
260 EXEC LD
270 END
280 DATA 83,00,00,30,8D,00,08
290 DATA 8F,01,68,96,96,97,E6
300 DATA 39,34,04,D6,6F,5C,2B
310 DATA 02,35,84,35,04,32,62
320 DATA 34,04,F6,FF,22,54,25
330 DATA FA,BD,8E,0C,35,84
```

**Now! THE MOST COMPLETE LIST OF
EDUCATIONAL TRS-80 COLOR COMPUTER™
PROGRAMS IN THE UNITED STATES**

Only **\$4.00** per cassette

A partial list —

- Add
- Algebra
- Alphabet
- Planetary Positions
- Flash cards for German, French, Spanish, States and Capitals
- Featuring — Computerized Encyclopedia
- Biology
- Weather Forecaster
- Physics

48 cassettes (\$200 with case)

Vol. 1-4

Many more! From Kindergarten through graduate courses. All cassettes \$4.00 each. Write for free list. Visa and Mastercharge accepted

MOSES ENGINEERING COMPANY

Dept. R Route 7, Regent Drive
Greenville, S.C. 29609
(803) 834-7974

**RAINBOW PROGRAMS NOW
AVAILABLE ON TAPE**

A new service, **RAINBOW ON TAPE**, is now available. The service will provide listings of programs appearing in the **RAINBOW** on cassette tape, ready to CLOAD into your CoCo.

All programs longer than 25 lines will be offered through **RAINBOW ON TAPE**. The tape is designed to facilitate the loading of programs and will go hand-in-hand with editorial copy in the particular issue of the **RAINBOW** in which the programs appear. No documentation will accompany the tapes.

RAINBOW ON TAPE is available from the **RAINBOW**, 5803 Timber Ridge Dr., Prospect, KY, 40059, for \$5 each or \$50 per year (12 tapes). Kentucky residents please add 5% state sales tax. No "back issue" tapes are available, although plans will be announced shortly to make selected groups of programs from back issues available. All tapes are guaranteed to load.

"Obviously, one of the major time-consuming tasks for people who want to type in programs from the **RAINBOW** is the typing-in process," said Lawrence C. Falk, publisher of the magazine. "The new **RAINBOW ON TAPE** service will eliminate this problem -- and the need to spend additional hours debugging typographic errors."

RAINBOW ON TAPE will be sent first class mail to avoid Postal Service delays.

Utility...

**SAVE ML PROGRAMS
TO YOUR DISK**

By Jorge Mir
RAINBOW Utilityman

SAVEM is a disk version of a program previously published in the **RAINBOW** that facilitates the saving of machine language programs. Additional features have been incorporated into this new version of the program which I find useful with the disk system.

The program starts by relocating itself to the upper part of RAM. It checks to determine whether you have a 16K or 32K system and relocates itself starting at hex location &H3600 for 16K or &H7600 for 32K. Since most machine language programs occupy the lower RAM area, relocating **SAVEM** to a higher location will avoid conflict most of the time. In

(Continued on Page 44)



COLOR
★ GAMES ★

• Arcade Graphics •

Strategy Adventure • Invaders •

Pac Attack • Storm • Magikube

• Cave Hunter • Berserk • Maze Race •

Calixto Island • Black Sanctum ★

HOME & WORK ★ Checkbook • Finance •

Word Processing • Color Data Organizer

• 3D Drawing Board • Mailing List ★

PROGRAMMER AIDS ★ PASCAL • Editor •

Diagnostics • Monitor • Assembler

★ 16K + Memory Expansion to 32K ★

• Supplies • Printers • Modems •

Books ★ Accessories ★

COMPUTER

CASSETTE AND DISKETTE



6809 Specialists

Dept. C • Box 668
Encinitas, CA 92024
(714) 436-3512

Computerware is a trademark of Computerware.

DISK SAVE (From Page 42)

the event that the program you wish to save covers the RAM areas noted above, you can have *SAVEM* relocate itself to any RAM area by changing lines 720-800, thus avoiding conflict with the program to be copied.

After relocating itself, *SAVEM* presents you with a menu through which you can choose to copy a program from cassette or disk. It also provides for copying a program currently in RAM (if you choose this option and have no program in RAM, *SAVEM* will crash).

To load from cassette, you are asked for the program name and, after you input it, the cassette tape is searched for the program. If you want to offset load the program, you indicate so as part of the program name just as you would do if you were offset loading a program from cassette without the aid of the *SAVEM* program (see the manual for the syntax).

Once the program is loaded into RAM, the hex and decimal values of the start, end and execute addresses are displayed for information purposes. In addition, you are asked whether the target program was offset loaded and, if so, *SAVEM* then asks for the offset hex value so it can correct the reference at the start of the program. In addition, you are asked for the title you wish to use for the program you are saving and you are given a choice of saving the program to tape or disk.

Before you indicate you want the program saved to tape, you should have the recorder ready in the record mode.

If the program is saved to disk, *SAVEM* creates a data file indicating the start, end and execute points of the target program. This comes in handy later on when you want to load from disk and copy the programs to other disks or cassette tapes since, as you may have already found out, the disk system does not use locations &H007E-&H007F or &H01E7-&H01E8 to indicate the start and end of programs.

To load from disk, you can load any machine language program with the *SAVEM* program, provided the program was previously copied from cassette using *SAVEM*. Before loading from disk, the *SAVEM* searches for the start, end and execute addresses previously stored on disk when the target program was loaded from cassette and then transferred to disk. If the program was not previously saved using

SAVEM, it returns to the program name prompt.

Once the program is loaded into RAM you are given a choice of saving to disk or cassette and an option to change the title of the program.

In loading from memory, when your program is already stored in RAM, you can still copy to cassette or disk since *SAVEM* determines to various addresses needed as well as the name (which is stored in locations &H01D2-&H01D9). This choice was added since, in some instances, you may not know the exact name of the program stored on cassette. If that is the case, you simply type CLOADM and the program is loaded into RAM. You then can run *SAVEM* to copy to disk or tape.

There are no special operating instructions to run *SAVEM*. However, it must be loaded and RUN before attempting to copy any programs. If you load *SAVEM* after you have a machine language program in RAM, it may not function properly.

SAVEM is to be used only to copy your own programs from tape to disk and vice-versa.

The listing:

```

10 GOTO 730
20 CLS:PRINT TAB(10)"* SAVEM *"
30 PRINT TAB(10)"-----"
40 PRINT @165,"1 - LOAD FROM DISK"
50 PRINT @197,"2 - LOAD FROM CASSETTE"
60 PRINT @229,"3 - COPY PROGRAM IN RAM"
70 PRINT @261,"4 - END PROGRAM"
80 I$=INKEY$:IF I$=""THEN80
90 I=VAL(I$):IF I<1 OR I>4 THEN 80
100 IF I=3 OR I=4 THEN 130
110 PRINT:INPUT"PROGRAM NAME":N$
120 IF LEN(N$)>8 THEN 110
130 ON I GOTO 150,310,320
140 END
150 IF LEN(N$)=8 THEN 170
160 N$=N$+" ":GOTO150
170 LOADM N$
180 CLOSE#1:R=0
190 OPEN"D",#1,"SAVEM/DAT",20
200 FIELD #1, 8 AS NAME$, 4 AS BEGIN$, 4 AS TAIL$, 4 AS START$
210 IF R=LOF(1) THEN 110 ELSE R=R+1
220 GET #1, R
230 IF NAME$=N$ THEN 240 ELSE210
240 A$=PROG$
250 A=VAL("&H"+BEGIN$)
260 B=VAL("&H"+TAIL$)

```

(Continued on Page 4)

IF YOU DON'T HAVE
TIME TO CREATE
YOUR OWN COLOR
COMPUTER GAMES,
THEN TRY.....

IMB's CREATAVADER

FEATURES SEVEN
PREDESIGNED TARGETS
INCLUDING:

Communist flags
Television sets
Whales
Killer tomatoes
Smiley faces
and
CATS!!!!!!

OR

Design your own
'invader-like'
targets with just
a few strokes of
the keyboard.
Get even with the
things which bug
you the most by
blasting marching
rows of them with
CREATAVADER.

'18.95

THIS IS THE GAME EVERY COLOR
COMPUTER OWNER WILL WANT AS
PART OF HIS OR HER SOFTWARE
COLLECTION.

AVAILABLE ONLY FROM

IMB

Illustrated memory banks
P.O. BOX 289
WILLIAMSTOWN, MA. 01267-0289

TEL. 413-663-9648

NEW
ARCADE
GAME

16K COLOR EXTENDED HI-RESOLUTION GAMES**

GATOR ZONE



THE FIRST ANTI-PREPPY COMPUTER GAME
WHERE YOU'LL FIGHT OR LOSE YOUR SHIRT!

***18.95**

SOFTWARE AUTHORS WELCOMED



During the last year, IMB has given away
more FREE software for the Color Computer
than some companies have sold.
WHY?

IMB is dedicated to providing the very
finest Color Extended Basic software at
prices that you can afford. If you haven't
tried our fine software, send us a self-
addressed stamped envelope and we'll send
you a printed copy of ALPINE ALIENS.

Once you see the high quality and speed
of our FREE program, you'll know why our
programs have set the standards for other
Extended Basic programs to follow and why
so many Color Computer owners have chosen
to purchase our software.

Why not join them? We accept MASTERCARD
and VISA for orders, and now you can call
in your order at (413) 663-9648 (3-7 EST).

DISK SAVE (From Page 44)

```

270 C=VAL("&H"+START$)
280 CLOSE #1
290 CLS:PRINT"PROGRAM: "N$
300 GOTO 420
310 CLOADM N$
320 PG$=""
330 FOR X=474 TO 481
340 Y=PEEK(X):IF Y=32 THEN Y=143
350 PG$=PG$+CHR$(Y)
360 NEXT X
370 A=PEEK(487)*256+PEEK(488)
380 B=PEEK(126)*256+PEEK(127)-1
390 C=PEEK(157)*256+PEEK(158)
400 Y$=""
410 CLS:PRINT"PROGRAM: "PG$
420 PRINT"          DECIMAL"," HEX
"
430 PRINT"          -----"," ---
-"
440 PRINT"START: "A," "HEX$(A)
450 PRINT" END: "B," "HEX$(B)
460 PRINT"ENTRY: "C," "HEX$(C)
470 IF LEFT$(I$,1)="Y" THEN 510
480 IF I<>3 THEN 510
490 PRINT:INPUT"WAS PROGRAM OFFS
ET LOADED";Y$
500 IF LEFT$(Y$,1)="Y" THEN INPU
T"OFFSET ADDRESS (TYPE '&H'+####
)";I:A=A+I:GOTO410
510 PRINT:INPUT"WHAT IS THE TITL
E YOU WISH TO USE FOR THIS PRO
GRAM";A$
520 A$=LEFT$(A$,8)
530 PRINT"PROGRAM CAN BE SAVED O
N:"
540 PRINT"      (D) DISK"
550 PRINT"      (C) CASSETTE"
560 PRINT:INPUT"YOUR CHOICE";I$
570 IF I$="D" THEN 600
580 IF I$="C" THEN 700
590 GOTO 560
600 SAVEM A$,A,B,C
610 OPEN"D",#1,"SAVEM/DAT",20
620 FIELD #1, 8 AS NAME$, 4 AS B
EGIN$,4 AS TAIL$, $ AS START$
630 R = LOF(1)+1
640 LSET NAME$=A$
650 LSET BEGIN$=HEX$(A)
660 LSET TAIL$=HEX$(B)
670 LSET START$=HEX$(C)
680 PUT #1,R
690 CLOSE#1:GOTO 710
700 CSAVEM A$,A,B,C
710 PRINT:PRINT"ALL DONE":GOTO 2
0
720 DATA BD,B3,ED,1F,02,7E,96,A7
730 IF PEEK(&H25)<>&H7F THEN 780
740 CLEAR200:FOR I=0TO7:READE$
750 POKE&H7603+I,VAL("&H"+E$):NE
XT
760 DEFUSR0=&H7603:X=USR0(&H7618
)

```

MAKE LETTERHEADS
FOR CORRESPONDENCE

Let's face facts folks, while a lot of printers can use single sheet paper, its a hassle. Yet, with all the sophisticated word processors out, your CoCo is an excellent tool for writing letters -- and it and the word processing software is a heck of a lot less expensive than a good electric typewriter.

But those single sheets!

One answer is simply to print out your name and address on the inside of your letterhead, using white pin feed paper. That eliminates the problem of feeding in single sheets -- and, another annoyance -- it satisfies the little "paper out" selector which some printers have and which is activated when single sheets pass the little metal reed.

The EAST TEXAS COLOR COMPUTER CLUB, and president Ron Garrett, have come up with a unique solution that you might consider. Let your CoCo and printer print a letterhead. Because the CoCo and line printer graphics are so versatile (especially with the LP VII and LP VIII), you can get just about as fancy as you wish!

Ron and the EAST TEXAS COLOR COMPUTER CLUB have generously consented to allow us to print the following program, which is what the club uses to produce its letterhead (see the illustration). With a little imagination, you can adapt this program to your own use. Please do not use their graphics. They are copyrighted and listed here for illustrative purposes only.

The Club (2101 East Main St., Henderson, TX, 75652) is always looking to attract members and publishes a bi-monthly newsletter. Those interested should contact Garrett.

The listing:

```

1 CLS:PRINT@232,"SET PRINTER TO
8          BIT POSITION"
2 PRINT@380," ":INPUT" HIT <EN
TER> WHEN READY";Z$
3 'COPYRIGHT AUG/1981 BY THE EAS
T TEXAS COLOR COMPUTER CLUB
4 '2101 EAST MAIN STREET
5 'HENDERSON, TEXAS 75652
10 DEFUSR0=15785
770 GOTO 20
780 CLEAR200:FORI=0TO7:READE$
790 POKE&H3603+I,VAL("&H"+E$):NE
XT
800 DEFUSR0=&H3603:X=USR0(&H3618
)
810 GOTO 20

```

```

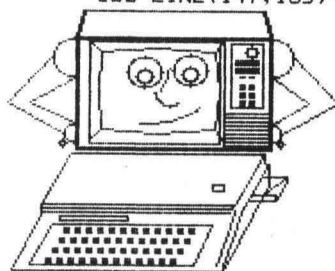
20 PMODE 4,1:PCLS:SCREEN 1,1
30 LINE(88,10)-(168,10),PSET
40 LINE-(171,23),PSET
50 LINE(167,10)-(170,23),PSET
60 LINE(88,10)-(85,23),PSET
70 LINE(89,10)-(86,23),PSET
80 LINE(86,23)-(170,23),PSET
90 LINE(86,24)-(170,24),PSET
100 LINE(171,23)-(171,77),PSET
110 LINE(85,23)-(85,77),PSET
120 LINE(86,23)-(86,77),PSET
130 LINE(170,23)-(170,77),PSET
140 LINE(150,23)-(150,77),PSET
150 LINE(85,77)-(171,77),PSET
160 LINE(85,78)-(171,78),PSET
170 LINE(91,25)-(148,25),PSET
180 LINE-(148,75),PSET
190 LINE-(91,75),PSET
200 LINE-(91,25),PSET
210 LINE-(96,30),PSET
220 LINE-(108,29),PSET
230 LINE-(121,28),PSET
240 LINE-(133,29),PSET
250 LINE-(146,30),PSET
260 LINE-(150,24),PSET
270 LINE(146,30)-(147,40),PSET
280 LINE-(148,49),PSET
290 LINE-(147,59),PSET
300 LINE-(146,68),PSET
310 LINE(150,74),PSET
320 LINE(146,68)-(133,69),PSET
330 LINE-(121,70),PSET
340 LINE-(108,69),PSET
350 LINE-(96,68),PSET
360 LINE-(91,73),PSET
370 LINE(96,68)-(95,49),PSET
380 LINE-(96,30),PSET
390 FOR X=60 TO 77 STEP 2
400 LINE(150,X)-(170,X),PSET:NEXT
410 LINE(153,26)-(167,57),PSET,B
420 CIRCLE(162,30),3
430 LINE(155,34)-(165,36),PSET,B
440 LINE(155,38)-(165,40),PSET,B
450 FOR X=157 TO 163 STEP 4
460 LINE(X,42)-(X+2,42),PSET,BF
470 LINE(X,46)-(X+2,48),PSET,BF
480 LINE(X,50)-(X+2,52),PSET,BF
490 LINE(X,54)-(X+2,56),PSET,BF
500 NEXT
510 CIRCLE(115,40),8
520 CIRCLE(135,39),8
530 CIRCLE(115,42),4
540 CIRCLE(135,41),4
550 CIRCLE(126,50),7,1,15,5
560 CIRCLE(106,38),20,1,0,1
570 CIRCLE(115,48),30,5,1,28
580 CIRCLE(171,33),10,5,1,75,2
590 CIRCLE(84,33),10,5,1,25,75
600 CIRCLE(171,70),5,5,1,75,25
610 CIRCLE(84,70),5,5,1,25,75

```

```

620 LINE(181,33)-(200,55),PSET
630 LINE-(176,70),PSET
640 LINE(172,43)-(187,55),PSET
650 LINE-(172,65),PSET
660 LINE(74,33)-(55,55),PSET
670 LINE-(79,70),PSET
680 LINE(84,43)-(65,55),PSET
690 LINE-(84,65),PSET
700 CIRCLE(79,75),2
710 CIRCLE(175,75),2
720 REM DRAW COMPUTER
730 LINE(83,80)-(168,80),PSET
740 LINE-(168,84),PSET
750 LINE-(170,85),PSET
760 LINE-(170,95),PSET
770 LINE-(150,138),PSET
780 LINE-(57,138),PSET
790 LINE-(70,110),PSET
800 LINE-(70,105),PSET
810 LINE-(83,80),PSET
820 LINE(70,105)-(155,105),PSET
830 LINE(70,107)-(154,107),PSET
840 LINE(70,109)-(153,109),PSET
850 LINE(150,138)-(150,135),PSET
860 LINE-(158,109),PSET
870 LINE-(170,85),PSET
880 LINE(147,135)-(155,109),PSET

```

E
A
S
T
©T
E
X
A
S

COLOR COMPUTER CLUB

2101 EAST MAIN

HENDERSON 75652

```

890 LINE-(154,107),PSET
900 LINE-(155,105),PSET
910 LINE(162,100)-(173,100),PSET
920 LINE-(173,103),PSET
930 LINE-(162,103),PSET
940 LINE(168,100)-(178,91),PSET
950 LINE-(168,91),PSET
960 LINE(145,95)-(150,98),PSET,B
970 LINE(173,103)-(178,94),PSET
980 LINE-(178,91),PSET
990 LINE(155,105)-(168,80),PSET
1000 LINE(75,115)-(145,115),PSET
1010 LINE-(137,135),PSET
1020 LINE-(65,135),PSET
1030 LINE-(75,115),PSET
1040 FOR X=80 TO 135 STEP 5
1050 LINE(X,117)-(X+2,119),PSET,
BF

```

(Continued Next Page)

LETTERHEADS (From Page 47)

```

1060 NEXT
1070 FOR X=78 TO 133 STEP 5
1080 LINE(X,122)-(X+2,124),PSET,
BF
1090 NEXT
1100 FOR X=75 TO 130 STEP 5
1110 LINE(X,127)-(X+2,129),PSET,
BF
1120 NEXT
1130 FOR X=72 TO 127 STEP 5
1140 LINE(X,132)-(X+2,134),PSET,
BF
1150 NEXT
1160 LINE(78,111)-(108,113),PSET,
,B
1170 DRAW"BM82,145;NF2L6G2D8F2R6
E2;BR5NF2U8E2R6F2D8G2NL6;BR7NU12
R10;BR7H2U8E2R6F2D8G2NL6BR7U12R6
F2D3G2L6R3F6
1180 DRAW"BM20,20;NR15D7NR10D8R1
5;BD32H2L11G2D4F2R11F2D3G2L11H2;
BD9R7NR8D15
1190 LINE(27,42)-(20,57),PSET;LI
NE(27,42)-(35,57),PSET;LINE(25,5
0)-(29,50),PSET
1200 DRAW"BM235,20;L8ND15L8;BD22
NR15D8NR10D8NR15;BD7F8NE8NG8F8;B
D32H2L11G2D4F2R11F2D3G2L11H2"
1210 LINE(228,89)-(220,104),PSET
:LINE(228,89)-(235,104),PSET;LIN
E(225,97)-(232,97),PSET
1220 DRAW"BM37,167;H2L6G2D8F2R6E
2;BR5NF2U8E2R6F2D8G2NL6;BR7U12F5
E5D12;BR5U12R6F2D3G2L6;BR15BU7D1
0F2R6E2U10;BR5R5ND12R5;BR5NR10D6
NR7D6R10;BR5U12R6F2D3G2NL6F5;BU1
BR28NE2L6H2U8E2R6F2BU2;BR5D12R10
;BR5BU2NU10F2R6E2U10;BR5ND12R6F2
D2G2NL6F2D2G2L6"
1230 CIRCLE(27,120),8
1240 CIRCLE(27,120),4,5,1,1,1,9
1250 DRAW"BM25,184;E1R1F1G3D1R3;
BR3U5;BR4G1D3F1R1E1U3H1NL1;BR4ND
5;BR6NR3D2NR2D3R3;BR2U4NR3E1R1F1
D4;BR4NH1R1E1U1H1L1H1E1R1F1;BU1B
R3R1ND5R2;BR6ND5F2E2D5;BR3U4NR3E
1R1F1D4;BR3U3BU1U1;BR3ND5F5U5
1260 DRAW"BM125,184;D2ND3R3ND3U2
;BR3NR3D2NR2D3R3;BR3U5F5U5;BR3D5
R1E1U3H1L1;BR6NR3D2NR2D3R3;BR3U5
R2F1D1G1NL2F2;BR4NH1R1E1U1H1L1H1
E1R1F1;BR3NE1D3F1R1E1U3H1NL1;BR4
ND5F5U5;BR8R3G3D2;BR7NH1R1E1U1H1
L2U2R3;BR5NF1L1G1D3F1R1E1H1NL2;B
R5BU3NR3D2R2F1D1G1L1H1;
1270 DRAW"BR7D1NR3U1E3H1L1G1
1280 FOR X=15742 TO 16360
1290 READ A:POKE X,A:NEXT
1300 DATA 0,0,142,61,152,191,1,1
07,134,126,183,1,106,183,1,103,1
42,63,80,191,1,104,127,63,175,57
,13,111,39,3,126,140,241,50,98,1
89,161,177,129,95,39,1,57,52,52
1310 DATA 150,182,129,0,39,14,12
9,2,39,19,129,4,39,35,53,52,18,1
34,32,57,134,16,183,63,181,134,3
2,32,7,134,16,183,63,181,134,96,
183,63,176,134,28,183,63,183,183
1320 DATA 63,179,32,18,134,32,18
3,63,181,134,192,183,63,176,134
28,183,63,183,127,63,179,158,186
,191,63,177,191,63,190,127,63,18
7,134,18,189,63,106,134,27,189,6
3,106
1330 DATA 134,16,189,63,106,134,
0,189,63,106,134,112,189,63,106,
246,63,181,84,84,52,4,16,142,63,
201,52,32,189,62,219,53,32,142,6
3,193,166,128,68,125,63,175,39,1
1340 DATA 67,138,128,167,160,140
,63,201,38,238,16,140,63,233,45,
222,142,63,201,127,63,186,166,12
8,183,63,180,124,63,186,140,63,2
33,38,5,189,62,114,32,53,166,132
,177
1350 DATA 63,180,38,15,124,63,18
6,166,128,140,63,233,38,239,189,
62,114,32,31,189,62,114,32,208,1
82,63,186,74,39,85,134,28,189,63
,106,141,69,182,63,186,189,63,10
6,182,63,180,189,63,106,57,53,4,
90,38,134,134,13,189
1360 DATA 63,106,115,63,187,246,
63,176,190,63,190,58,193,32,38,1
1,246,63,187,193,0,38,4,246,63,1
81,58,191,63,190,122,63,183,39,3
,126,61,254,134,30,189,63,106,53
,52,134,32,57,125,63,179,39,3,12
0,63,186,57,141,245
1370 DATA 182,63,180,189,63,106,
122,63,186,38,245,57,134,7,183,6
3,185,190,63,190,191,63,188,190,
63,188,230,132,156,183,45,2,198,
0,247,63,192,79,142,63,193,120,6
3,192,102,134,246,63,176,193,32,
38,23,246,63,187,39,9,246,63,185
,193,7,39,11,32,7,246,63
1380 DATA 185,193,4,39,2,103,134
,76,129,8,45,216,182,63,181,16,1
90,63,188,49,166,16,191,63,188,1
22,63,185,246,63,176,193,32,38,9
,246,63,185,193,3,38,168,32,5,12
5,63,185,38,161,16,190,63,190,49
,33,16,191,63,190,57,52,4,214,11
1
1390 DATA 193,254,53,4,39,14,16,
190,128,0,16,140,69,88,38,3,126,
130,115,57,50,98,52,23,26,80,141
,48,95,141,47,198,8,52,4,95,68,6
9,88,141,37,53,4,90,38,243,141,2
8,53,3,129,13,39,8,12,156,214,15
6,209,155,37
1400 DATA 6,15,156,141,20,141,16

```

(Continued on Page 51)

TELEWRITER

Provides your COLOR COMPUTER with:

REAL LOWER CASE CHARACTERS ■ A POWERFUL TEXT FORMATTER
51 COLUMN × 24 LINE SCREEN DISPLAY ■ SPECIAL DRIVER FOR EPSON MX-80
ADVANCED CASSETTE HANDLING FEATURES ■ A SOPHISTICATED FULL-SCREEN TEXT EDITOR

and requires absolutely no hardware modifications

TELEWRITER

Telewriter is a powerful word processor designed specifically for the Color Computer. It can handle almost any serious writing job and it is extremely easy to use. It has all the advanced features you need to create, edit, store, format and print any kind of text. With Telewriter you can quickly produce perfect, finished copy for letters, reports, term papers, articles, technical documentation, stories, novels, screenplays, newsletters. It is also a flexible and efficient way to take notes or organize ideas and plans.

51 × 24 DISPLAY

The Color Computer is an incredibly powerful and versatile computer, but for text editing it has some major drawbacks. The small 32 character by 16 line screen format shows you too little of the text and, combined with its lack of lower case letters, bears little resemblance to the way text really looks on the page. Reverse video in place of lower case just adds confusion.

Telewriter eliminates these shortcomings with **no hardware modifications required**. By using software alone, Telewriter creates a new character set that has **real lower case letters**, and puts 24 lines of 51 characters on the screen. That's more on-screen characters than Apple II, Atari or TRS-80 Model III. That's more than double the Color Computer's standard display.

FULL SCREEN EDITOR

The Telewriter editor is designed for maximum ease of use. The commands are single key (or single key plus control key), fast, and easy to remember. There is no need to switch between insert modes and delete modes and cursor movement modes.

You simply type. What you type is inserted into the text at the cursor, on the screen. What you see on the screen is always the current state of your text. You can move quickly through the text with one key cursor movement in all 4 directions, or press the shift key simultaneously for fast, auto-repeat. You can jump to the top or bottom of the text, the beginning or end of a line, move forward or backward a page at a time, or scroll quickly up or down. When you type past the end of a line, the wordwrap feature moves you cleanly to the next.

You can copy, move or delete any size block of text, search repeatedly for any pattern of characters, then instantly delete it or replace it with another. Telewriter gives you a tab key, tells you how much space you have left in memory, and warns you when the buffer is full.

FORMAT FEATURES

When it comes time to print out the finished manuscript, Telewriter lets you specify: left, right, top, and bottom margins; line spacing and lines per page. These parameters can be set before printing or they can be dynamically modified during printing with simple format codes in the text.

Telewriter will automatically number pages (if you want) and automatically center lines. It can chain print any number of text files from cassette without user intervention. You can tell it to start a new page anywhere in the text, pause at the bottom of the page, and set the Baud rate to any value (so you can run your printer at top speed).

You can print all or any part of the text buffer, abort the printing at any point, and there is a "Typewriter" feature which allows you to type straight to your printer. Because

Telewriter lets you output numeric control codes directly (either from the menu or during printing), it works with any printer. There's even a special driver for the Epson MX-80 that lets you simply select any of its 12 fonts and do underlining with a single underline character.

CASSETTE HANDLER

Telewriter makes cassette as simple to use as possible. It will search in the forward direction till it finds the first valid file, so there's no need to keep retying a load command when you are lost in your tape. You can save all or any part of the text buffer, and you can append pre-existing files to what you have in the buffer already. You can abort an append or filesearch without harming the program or the text in the buffer.

Telewriter will maintain compatibility with popular Color Computer disk systems, but, since it makes using cassette almost painless, you can still have a powerful word processor without the major additional cost of a disk.

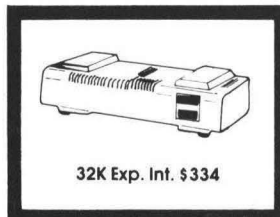
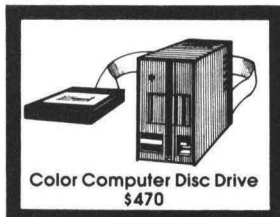
AVAILABLE NOW

Telewriter turns your Color Computer into the lowest cost hi-power word processor in the world today. It runs in 16K or 32K (32K recommended) and is so simple you can be writing with it almost immediately. It comes with complete documentation and is fully supported by Cognitec. Telewriter costs \$49.95 (California residents add 6% tax). To order or request more information write:

Cognitec
 704 Nob Ave.
 Del Mar, Ca. 92014

Or call (714) 755-1258 (weekdays, Saturdays, and early morning). We will gladly answer your questions.

From Computer Plus to YOU ...
PLUS after PLUS after PLUS



BUY DIRECT Here are just a few of our fine offers ...
 call TOLL FREE for full information.

COMPUTERS

| | |
|------------------------|--------|
| Model II 64K | \$3300 |
| Model III 4K LEV I | 599 |
| MODEL III 16K | 839 |
| MODEL III 32K | 945.50 |
| *MODEL III 32K | 881.50 |
| MODEL III 48K | 1052 |
| *MODEL III 48K | 924 |
| Model III 48K | |
| 2 Disc & RS232 c | 2059 |
| Color Computer 4K | 310 |
| Color Computer 16K | 416.50 |
| *Color Computer 16K | 352.50 |
| Color Computer 16K | |
| w/extended basic | 459 |
| Color Computer 32K | |
| w/extended basic | 525 |
| Color Computer Drive 0 | 470 |
| Pocket Computer 2 | 230 |
| VIDEOTEX | 310 |

* Computer Plus New Equipment,
 with NEC RAM installed.
 180 Day Computer Plus Warranty.

PERIPHERALS

| | |
|-------------------------------|--------|
| Expansion Interface OK | \$249 |
| Expansion Interface 16K | 355.50 |
| * Expansion Interface 16K | 291.50 |
| Expansion Interface 32K | 462 |
| * Expansion Interface 32K | 334 |
| 16K RAM N.E.C. 200 N.S. chips | 25 |

MODEMS

| | |
|-----------------------------|-----|
| Lynx Direct Connect MI/MIII | 235 |
| Auto Ans./Dial | |
| Telephone Interface II | 169 |
| R.S. Modem I D.C. | 130 |
| R.S. Modem II D.C. | 210 |

PRINTERS

| | |
|-------------------|------|
| Daisy Wheel II | 1695 |
| Epson MX80 | 479 |
| Epson MX80 FT | 589 |
| Epson MX100 | 759 |
| Line Printer VII | 315 |
| Line Printer VIII | 620 |
| Line Printer V | 1610 |

| | |
|-----------------------|------|
| Microline 80 | 325 |
| Microline 82A | 465 |
| Microline 83A | 735 |
| Microline 84 Parallel | 1090 |
| P. C. Plotter Printer | 199 |

DISK DRIVES

| | |
|--------------------------|------|
| R.S. Model III 1ST-Drive | 712 |
| Tandon 40 Track MI | 299 |
| R.S. 1 Drive Exp MII | 999 |
| R.S. 2 Drive Exp MII | 1518 |
| R.S. 3 Drive Exp MII | 2040 |

SOFTWARE

| | |
|----------------------------|-----|
| R.S. Software 10% off list | |
| Newdos 80 MIII | 149 |
| ST80III | 149 |

ETC.

| | |
|----------------------------|-------|
| Verbatim 5" Double Density | 32 |
| Verbatim 8" Data Life | 49.95 |
| Ctr-80A recorder | 52 |
| C. C. Joysticks | 22 |

**We have the lowest possible
 Fully Warranted Prices AND
 a full complement of Radio Shack
 Software.**

DEALER INQUIRIES ARE INVITED

Prices subject to change without notice.
 Not responsible for typographical errors.
 TRS-80 is a registered trademark of Tandy Corp.



Call TOLL FREE 1-800-343-8124

**computer
 plus**

245A Great Road
 Littleton, MA 01460
 617-486-3193

Write for your
 free catalog

LETTERHEADS (From Page 48)

```
,246,255,34,84,37,250,53,148,198
,2,247,255,32,141,0,158,149,140,
158,151,126,167,211,0,192,6,0,0,
128,32,255,0,255,0,32,0,30,159,3
0,128,0,0,0,0,0,0,0,0,128,128,
128,128,128
1410 DATA 128,128,128,128,128,12
8,128,128,128,128,128,128,128,12
8,128,128,128,128,128,128,128,12
8,128,128,128,128,0,0,0,0,0,0,0,
0
1420 Y=USR(0)
1430 CLS:PRINT @ 232,"I AM FINIS
```

HED"

```
1440 INPUT"      WRITE A LETTER"
;L$
1450 IF LEFT$(L$,1)="Y" THEN CLS
:PRINT#-2,CHR$(13):GOTO1460 ELSE
END
1460 LINE INPUTA$:IF A$="_" THEN
PRINT#-2,CHR$(31):GOTO 1460
1470 IF A$="[" THEN PRINT#-2,CHR
$(30):GOTO 1460
1480 IF A$="]" THEN PRINT#-2,STR
ING$(50,32);:GOTO 1460
1490 PRINT#-2,A$:GOTO 1460
```

SEPTER

OF

KZIRGA

RAINBOW CONNECTION SOFTWARE presents...



At last...a real-time graphics adventure game with arcade sound for your Color Computer! Truly an adventure you won't want to miss. 16K Ext Basic \$16.95 case - \$21.95 disk
ALSO ANNOUNCING...

\$26.95 case - 2 New Multipaks - \$31.95 disk

#4901 8 games including Compwind, #4902 8 games including Starfighter-4,
Brickout, B-17 Bomber, Blackjack Biorhythms, Computation, Lunar Lander

Include \$2.00 shipping per order.
Dealer inquiries invited.

3514 6th Place N.W.
Rochester, Minn. 55901

Not affiliated with THE RAINBOW. \$2.00 per item discount to all subscribers.

INDEX TO
ADVERTISERS

| | | |
|-----------------------------|----------------------------------|--------|
| Aardvark-80 | 39 Land Systems..... | 16 |
| Armadillo Software | 13 Little Computer Store..... | 20 |
| Cer-Comp..... 9, | 28 Mark Data Products..... | 17 |
| Chromasette..... | 8C Martin Consulting..... | 14 |
| Cliff's..... | 18 Micro-80..... | 21 |
| Cognitec..... | 49 Micro Technical Products.... | 12 |
| Color Software Services... | 10 Tom Mix Software..... | 7 |
| Computer Island..... | 19 Monk, Britt..... | 32 |
| Computer Plus..... | 50 Moses Engineering..... | 42 |
| Computerware..... | 43 Nanos Systems..... | 24 |
| Connection-80..... 26, | 27 Nelson Software..... | 23 |
| DSL Computer Products..... | 11 Peacock Enterprises..... | 8 |
| 80-U.S. Journal..... | 30 Prickly-Pear Software..... | 4 |
| Harmonycs..... | 7 Rainbow Connection Software.. | 41, 51 |
| Hogg, Frank Laboratory.... | 29 Snake Mountain Software..... | 36 |
| Illustrated Memory Banks... | 45 Spectral Associates..... | 38 |
| Land Systems..... | 16 Sugar Software..... | 15 |
| Jarb Software..... | 32 Superior Graphic Software.... | 5, 34 |
| | Transformation Technologies... | 6 |

The RAINBOW

5803 Timber Ridge Dr.
Prospect, KY 40059

Gentlemen:

YES! Sign me up for a one-year (12 issues) subscription to **the RAINBOW**.

Name _____

Address _____

City _____ State _____ Zip _____

☐ Payment enclosed

☐ Charge my VISA Account # _____ ☐ Charge my MasterCard Account # _____

Signature _____ Card Expiration Date _____ INTERBANK # _____

Subscriptions to the RAINBOW are \$16 per year in the United States. Canadian and Mexican rates are \$22 per year. Surface mail to other countries is \$31, air mail to other countries is \$49. Non-U.S. rates are higher due to postage costs alone. Payment accepted in U.S. funds.

Limited back issues are available for \$2 each for issues 1-7, \$2.50 each for issues 8 and upward. Shipping and handling costs of \$2.50 per order must be added.

Has your TRS-80 Color Computer READ A GOOD TAPE LATELY?

Trying to educate your CoCo can be a trying experience. Pounding on the keyboard is not the positive reinforcement your computer needs. **CHROMASETTE** Magazine is the civilized way to introduce your computer to the world of good software.

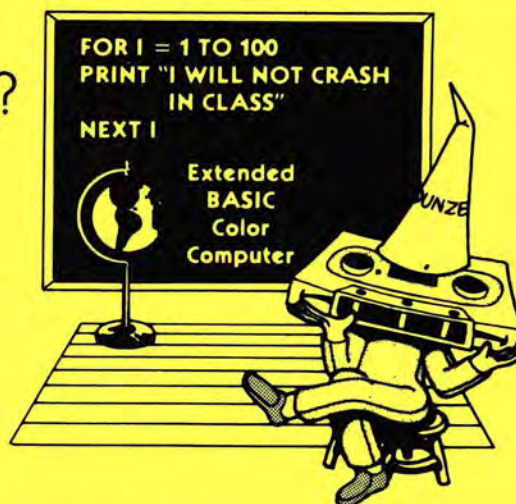
With **CHROMASETTE** Magazine, CoCo gets both quantity and quality. Every month, 6 to 8 programs arrive by First Class Mail. No need to type them in — **CHROMASETTE** Magazine is a cassette tape with educational, practical, utility, and game programs on it. Just load and run. Ah, the life of luxury! Give your computer a cultural lesson.

Get a subscription to **CHROMASETTE** Magazine.

The Bottom Line:

1 year (12 issues) \$45.00
6 months (6 issues) \$25.00
Single copies \$5.00
Calif. residents add 6% to single copies
Overseas — add \$10 to subscriptions, and \$1 to
single copies Sent AO rate

The Fine Print: Issues are sent First Class Mail. All issues from July 81 on available
— ask for list. Programs are for the Extended BASIC model only
TRS-80 is a trademark of Tandy Corp. MasterCard/Visa/Gold also welcome



Chromasette Magazine

PO Box 1087 Santa Barbara, CA 93102 (805) 963 1066

the RAINBOW

5803 Timber Ridge Drive • Prospect, KY 40059

The Monthly Magazine for Color Computer Users

Bulk Rate
U.S. Postage
Paid
Prospect, KY
Permit No. 18

ADDRESS CORRECTION REQUESTED